RESPONSE AND DEVELOPMENT WORK PLAN

AREA B: SUB-PARCEL B9-1
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

Prepared For:

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TABLE OF CONTENTS

TABLE OF CONTENTS
(CONT.)

FIGURES

TABLES

TABLE OF CONTENTS
(CONT.)

APPENDICES

ELECTRONIC ATTACHMENTS

1.0 INTRODUCTION

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic, has prepared this Response and Development Work Plan (RADWP) for a portion of the Tradepoint Atlantic property that has been designated as Area B: Sub-Parcel B9-1 (the Site). Tradepoint Atlantic submitted a letter (dated June 3, 2022; **Appendix A**) requesting an expedited plan review to achieve construction deadlines for the proposed development on this Site. As shown on **Figure 1**, Sub-Parcel B9-1 consists of approximately 4.58 acres located primarily within Parcel B9, but extending slightly into Parcel B5 of the approximately 3,100-acre former steel plant property. This RADWP (Revision 5) has been prepared because the proposed landscaped area in the southeast corner of the Site is no longer required by Baltimore County. The Site boundary has been updated to exclude this area.

As shown on **Figure 2**, Sub-Parcel B9-1 is slated for development and occupancy as a construction equipment storage and repair yard. Associated water lines, stormwater lines, electric lines, and sanitary sewer lines are also proposed. The planned development activities will generally include paving, installation of utilities, installation of a guard shack, and a 16,000 square foot garage. Subsequent site use will involve workers repairing construction equipment and drivers entering and leaving the Site. Outside of the main development area designated as Sub-Parcel B9-1, temporary construction zones (not intended for permanent occupancy) with a total area of 0.42 acres within the Limit of Disturbance (LOD) will be utilized to install roadway connections. These external construction worker areas are shown on **Figure 2**.

The conduct of any environmental assessment and cleanup activities on the Tradepoint Atlantic property, as well as any associated development, is subject to the requirements outlined in the following agreements:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the Maryland Department of the Environment (MDE), effective September 12, 2014; and
- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the United States Environmental Protection Agency (USEPA), effective November 25, 2014.

An application to enter the full Tradepoint Atlantic property (3,100 acres) into the MDE Voluntary Cleanup Program (MDE-VCP) was submitted to the MDE on June 27, 2014. The property's current and anticipated future use is Tier 3 (Industrial) and plans for the property include demolition and redevelopment over the next several years.

Sub-Parcel B9-1 is part of the acreage that was removed (Carveout Area) from inclusion in the Multimedia Consent Decree between Bethlehem Steel Corporation, the USEPA, and the MDE (effective October 8, 1997) as documented in correspondence received from USEPA on September

12, 2014. Based on this agreement, USEPA determined that no further investigation or corrective measures will be required under the terms of the Consent Decree for the Carve-Out Area. However, the SA reflects that the property within the Carveout Area will remain subject to the USEPA's Resource Conservation and Recovery Act (RCRA) Corrective Action authorities.

In consultation with the MDE, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the MDE and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (Code of Maryland Regulations (COMAR) 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Sub-Parcel B9-1 and complement the statutory requirements of the VCP (Section 7-501 of the Environment Article). Upon submission of a RADWP and completion of any remedial activities for the sub-parcel, the MDE shall issue a No Further Action Letter (NFA) upon a recordation of an Environmental Covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the MDE a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

Alternatively, Tradepoint Atlantic or other entity may elect to submit an application for a specific sub-parcel and submit it to the VCP for review and acceptance. If the application is received after the cleanup and redevelopment activities described in this RADWP are implemented and a NFA is issued by the Agencies pursuant to the CHS Act, the VCP shall prepare a No Further Requirements Determination for the sub-parcel.

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the RADWP, the cleanup and redevelopment activities may be conducted under the oversight authority of either the VCP or the CHS Act, so long as those activities comport with this RADWP.

This RADWP provides a site description and history; summary of environmental conditions identified by the 2014 Phase I Environmental Site Assessment (ESA); summary of relevant findings and environmental conditions identified by the relevant Phase II Investigations conducted between 2015 and 2020; a human health Screening Level Risk Assessment (SLRA) conducted for the identified conditions; and any necessary engineering and/or institutional controls to facilitate the planned development and address the impacts and potential human health exposures. These controls include work practices and applicable protocols that are submitted for approval to support the development and use of the Site. Engineering/institutional controls approved and installed for this RADWP shall be described in closure certification documentation submitted to the Agencies

demonstrating that exposure pathways on the Site are addressed in a manner that protects public health and the environment.

The remainder of Parcel B9 and Parcel B5 will be addressed in separate development plans in accordance with the requirements of the ACO, which may include RADWPs, if necessary. This work will include assessments of risk and, if necessary, RADWPs to address unacceptable risks associated with future land use. As discussed below, temporary external construction worker areas with a total area of 0.42 acres will be utilized to install roadway connections for the project outside of the sub-parcel. The temporary work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction is covered by this RADWP.

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The Sub-Parcel B9-1 development project consists of approximately 4.58 acres comprising a significant portion of Parcel B9 as well as a small portion of Parcel B5 (**Figure 1**). The development will include completion of a construction equipment storage and repair yard (**Figure 2**). Outside of the main development area designated as Sub-Parcel B9-1, temporary external construction worker areas (not intended for permanent occupancy) with a total area of approximately 0.42 acres within the construction Limit of Disturbance (LOD) will be utilized to install the facility entrance and subgrade utility connections for the project. The Site is currently zoned Manufacturing Heavy-Industrial Major (MH-IM) and is not occupied. There is no groundwater use on-site or within the surrounding Tradepoint Atlantic property.

Ground surface elevations at the Site range from approximately 10 to 12 feet above mean sea level (amsl), with the majority of the Site being relatively flat. According to Figure B-2 of the property Stormwater Pollution Prevention Plan Revision 9 dated September 27, 2021, surface water runoff from the Site is conveyed to the east and is discharged into Old Road Bay through National Pollutant Discharge Elimination System (NPDES) permitted Outfall 001 at the end of the Pennwood Canal.

2.2 SITE HISTORY

From the late 1800s until 2012, the production and manufacturing of steel was conducted at Sparrows Point. Iron and steel production operations and processes at Sparrows Point included raw material handling, coke production, sinter production, iron production, steel production, and semi-finished and finished product preparation. In 1970, Sparrows Point was the largest steel facility in the United States, producing hot and cold rolled sheets, coated materials, pipes, plates, and rod and wire. The steel making operations at the facility ceased in fall 2012.

Historically, the Site contained the Pennwood Power Plant, which produced electricity for the Bethlehem Steel facility. The Pennwood Canal, a man-made channel that served as a source of cooling water for the Pennwood Power Plant, connects Old Road Bay to the former plant. During the Phase I ESA site visit completed by Weaver Boos in 2014, the Pennwood Power Plant contained large out-of-service equipment, with observed surface staining on and below the equipment. Past flooding (at least one previous incident) caused water to pool on the equipment room floor and drain to the adjacent Pennwood Canal. According to Weaver Boos Consultants (Weaver Boos), it is unlikely that the flooding of the Pennwood Power Plant resulted in a significant release, and the powerhouse and canal sediments were not classified as a Recognized Environmental Condition (REC).

A 10,000-gallon lubricating oil underground storage tank (UST) was reportedly closed in place at the Pennwood Power Plant between 1989 and 1990 according to the Phase I ESA. The Pennwood Power Plant underwent demolition and backfilling during late-2018 and early-2019. A site visit was completed by ARM personnel on December 20, 2019, at which time all demolition materials had been removed and the Site had been regraded.

3.0 ENVIRONMENTAL SITE ASSESSMENT RESULTS

3.1 PHASE I ENVIRONMENTAL SITE ASSESSMENT RESULTS

A Phase I ESA was completed by Weaver Boos for the entire Sparrows Point property on May 19, 2014. Weaver Boos completed site visits of Sparrows Point from February 19 through 21, 2014, for the purpose of characterizing current conditions at the former steel plant. The Phase I ESA identified particular features across the Tradepoint Atlantic property which presented potential risks to the environment. These RECs included buildings and process areas where releases of hazardous substances and/or petroleum products potentially may have occurred. The Phase I ESA also relied upon findings identified during a previous visual site inspection (VSI) conducted in 1991 as part of the RCRA Facility Assessment prepared by A.T. Kearney, Inc. dated August 1993, for the purpose of identifying Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) on the property. This VSI is regularly cited in Description of Current Conditions (DCC) Report prepared by Rust Environment and Infrastructure (January 1998).

Weaver Boos' distinction of a REC or Non-REC was based upon the findings of the DCC Report (which was prepared when the features remained on-site in 1998) or on observations of the general area during their site visit. Weaver Boos made the determination to identify a feature as a REC based on historical information, observations during the site visit, and prior knowledge and experience with similar facilities. There were no RECs, SWMUs, or AOCs identified within the Sub-Parcel B9-1 development area. The following non-REC Finding was identified within the development area:

Pennwood Powerhouse Staining and Sediments (Finding 267):
During the Phase I ESA site visit, the Pennwood Power Plant contained large out-of-service equipment, with observed surface staining on and below the equipment. Past flooding (at least one previous incident) caused water to pool on the equipment room floor and drain to the adjacent Pennwood Canal. According to Weaver Boos, it is unlikely that the flooding of the Pennwood Power Plant resulted in a significant release, and the powerhouse and canal sediments were not classified as a REC. A 10,000-gallon lubricating oil UST was reportedly closed in place at the Pennwood Power Plant between 1989 and 1990 according to the Phase I ESA.

3.2 PHASE II INVESTIGATION RESULTS – SUB-PARCEL B9-1

Phase II Investigations specific to soil and groundwater conditions were performed for the property area including Sub-Parcel B9-1 in accordance with the requirements outlined in the ACO as further described in the following agency-approved Phase II Investigation Work Plans:

- Area B: Parcel B5 (Revision 1) dated December 3, 2015
- Area B: Parcel B9 (Revision 0) dated March 25, 2020
- Area B Groundwater (Revision 3) dated October 6, 2015

All soil samples and groundwater samples were collected and analyzed in accordance with agency-approved protocols during the Phase II Investigations, the specific details of which can be reviewed in each agency-approved Work Plan. Each Phase II Investigation was developed to target specific features which represented a potential release of hazardous substances and/or petroleum products to the environment, including RECs, SWMUs, and AOCs, as applicable, as well as numerous other targets identified from former operations that would have the potential for environmental contamination. Samples were also collected at site-wide locations to ensure full coverage of each investigation area. The full analytical results and conclusions of each investigation have been presented to the agencies in the following Phase II Investigation Reports:

- Area B: Parcel B5 (Revision 3) dated July 8, 2019
- Area B: Parcel B9 (Revision 0) dated December 17, 2020
- Area B Groundwater (Revision 0) dated September 30, 2016

This RADWP summarizes the relevant soil and groundwater findings from these Phase II Investigations with respect to the proposed development of Sub-Parcel B9-1.

3.2.1 Phase II Soil Investigation Findings

Based on the scope of development for Sub-Parcel B9-1, 38 soil samples collected from 17 soil borings (including three soil borings from the Parcel B5 Phase II Investigation and 14 soil borings from the Parcel B9 Phase II Investigation) were included in this evaluation of Sub-Parcel B9-1. The 17 boring locations are shown on **Figure 3**, and the samples obtained from these borings provided relevant analytical data for discussion of on-site conditions.

Soil samples collected during the Phase II Investigation were analyzed for the Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs) and polynuclear aromatic hydrocarbons (PAHs), Oil & Grease, Target Analyte List (TAL) metals, hexavalent chromium, and cyanide. Shallow soil samples (0 to 1 foot below ground surface (bgs)) were analyzed for polychlorinated biphenyls (PCBs). Soil sampling targets with potential petroleum contamination were also analyzed for total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO). The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

Soil sample results were screened against the Project Action Limits (PALs) established in the property-wide Quality Assurance Project Plan (QAPP) dated April 5, 2016, or based on other direct agency guidance. Several PALs have been adjusted based on revised toxicity data published by the USEPA (May 2021). **Table 1** and **Table 2** provide summaries of the detected organic compounds and inorganics in the soil samples collected from the soil borings relevant for this Site evaluation. **Figure S1** to **Figure S4** present the soil sample results that exceeded the PALs among

these soil borings. PAL exceedances consisted of one SVOC (benzo[a]pyrene) two PCBs (Aroclor 1260 and total PCBs), Oil & Grease, and five inorganics (arsenic, cobalt, lead, manganese, and thallium).

Non-aqueous phase liquid (NAPL) was not observed in any of the Phase II soil boring location.

3.2.2 Phase II Groundwater Investigation Findings

Groundwater conditions were investigated as reported in the Area B Groundwater Phase II Investigation Report (Revision 0 dated September 30, 2016). This report included aqueous sample data from five wells sampled during Area B Groundwater Phase II Investigation (SW-037-MWS, SW-038-MWS, SW-039-MWS, SW-073-MWS, and SW16-PZM003). The five monitoring points are within 600 feet of the development area and provide relevant analytical data for the proposed Sub-Parcel B9-1 development project and are shown on **Figure 4**. There is no direct exposure risk for future Composite Workers at the Site because there is no use of groundwater on the Tradepoint Atlantic property; however, groundwater may be encountered in the sub-parcel during some construction tasks. If groundwater is encountered, it will be managed to prevent exposures in accordance with the dewatering requirements outlined in Section 5.2. Additionally, vapor intrusion (VI) risks are evaluated in Section 3.2.3.

Each groundwater monitoring point was inspected for evidence of NAPL using an oil-water interface probe prior to sampling. None of the monitoring points relevant for the proposed development project showed evidence of NAPL during these checks. The groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs, TAL metals, hexavalent chromium, total cyanide, TPH-DRO, TPH-GRO, and Oil & Grease. The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

The Phase II Investigation groundwater results were screened against the PALs established in the property-wide QAPP dated April 5, 2016, or based on other direct agency guidance. Similar to the evaluation of soil data, several PALs have been adjusted based on revised toxicity data published by the USEPA (May 2021). **Table 3** and **Table 4** provide summaries of the detected organic compounds and inorganics in the groundwater samples submitted for laboratory analysis, and **Figure GW1** presents the groundwater results that exceeded the PALs. PAL exceedances in the Phase II Investigation groundwater samples collected in the vicinity of the proposed development project consisted of one VOC (chloroform), two SVOCs (naphthalene and pentachlorophenol), DRO, and six total and/or dissolved metals (beryllium, cobalt, hexavalent chromium, thallium, manganese, and vanadium). The inorganic PAL exceedances shown on **Figure GW1** do not include duplicate exceedances of total/dissolved metals. If both total and dissolved concentrations exceeded the PAL, the value for total metals is displayed.

3.2.3 Locations of Potential Concern

Groundwater data were screened to determine whether any sample results exceeded the USEPA Vapor Intrusion Target Cancer Risk (TCR) (carcinogen) or Target Hazard Quotient (THQ) (non-carcinogen) Screening Levels. None of the individual sample results exceeded the cumulative VI cancer risk screening level of 1E-5 or the non-cancer VI Hazard Index (HI) value of 1. Therefore, there are no identified VI risks associated with site development. The VI risk evaluation is summarized in **Table 5**.

Other locations of potential concern which are subject to special requirements could include elevated lead, PCBs, or TPH/Oil & Grease in soil. The soil data for Sub-Parcel B9-1 were evaluated to determine the presence of any such locations of potential concern including: lead concentrations above 10,000 mg/kg, PCB concentrations above 50 mg/kg, or TPH/Oil & Grease concentrations above 6,200 mg/kg. There were no soil concentrations of lead, PCBs, or TPH above the specified criteria. Oil & Grease exceeded the specified criteria at three locations (B9-005-SB, B9-009-SB, and B9-014-SB), as shown on **Figure S3**. These areas are identified as locations of potential concern.

As summarized in the B9-009-SB Excavation Report (dated August 31, 2022), an excavator was used to remove the soil in a 10-foot by 10-foot excavation down to the concrete slab at approximately 6 inches bgs to remove any impacts from the area. Therefore, Oil & Grease impacts at location B9-009-SB are no longer a location of potential concern.

Locations with physical evidence of NAPL are also considered to be locations of potential concern with respect to proposed development. No visual observations of NAPL were noted at any locations for the Site. Additionally, no NAPL was detected in any monitoring wells proximate to the proposed development area.

Following demolition of the Pennwood Power Plant, a survey was performed for asbestos in soils. All results were included in the Determination of Asbestos in Soil – Parcel B9 (Jenkins Environmental, Inc, November 24, 2021), which was submitted to the MDE Asbestos Division via email on December 13, 2021. This report is also included as an electronic attachment.

3.3 Human Health Screening Level Risk Assessment

3.3.1 Analysis Process

A human health SLRA has been completed based on the analytical data obtained from the characterization of surface and subsurface soils. The SLRA was conducted to evaluate the existing soil conditions to determine if any response measures are necessary.

The SLRA included the following evaluation process:

Identification of Exposure Units (EUs): As shown on **Figure 5**, the Composite Worker SLRA was evaluated using two Exposure Units (EU1 and EU2) with areas of 2.28 acres and 2.30 acres, respectively. EU1 corresponds with the proposed development area, and EU2 corresponds with the proposed non-development area. **Figure 6** shows the proposed capping plan, which is discussed in more detail below. The Construction Worker SLRA was evaluated using a slightly expanded EU (Site-Wide EU1-EXP), covering 5.00 acres in total which includes the 0.42 acres of additional construction worker areas incorporated within the LOD to include the facility entrance outside of the sub-parcel.

As noted above, a shallow excavation was completed at B9-009-SB which removed the surficial soil at this location. Therefore, soil data from the Phase II Investigation sample B9-009-SB-1 is not included in the SLRA.

It should be noted that industrial fill including processed slag aggregate sourced from the Tradepoint Atlantic property will be used within EU1; therefore, regardless of the findings of the Composite Worker baseline SLRA, EU1 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the industrial fill materials.

Identification of Constituents of Potential Concern (COPCs): For the project-specific SLRA, COPC screening was completed assuming a Target Risk (TR) of 1E-6 and THQ of 0.1. The initial screening also identified parameters detected at a frequency greater than 5%. Based on that data set, parameters were identified as COPCs if:

- The compound was detected in soil at a frequency of greater than 5%; and
- The maximum detection exceeded the USEPA's Composite Worker Soil Regional Screening Levels (RSLs).

A COPC screening analysis is provided in **Table 6** to identify all compounds above the relevant screening levels.

All aroclor mixtures (e.g., Aroclor 1248 and Aroclor 1260) are taken into account for the reported concentrations of total PCBs. The total PCBs concentrations are used to evaluate the carcinogenic risk associated with PCBs.

Exposure Point Concentrations (EPCs):

The COPC soil datasets for each EU were divided into surface (0 to 2 feet bgs), subsurface (>2 feet bgs), and pooled depths for estimation of potential EPCs. Thus, there are three soil datasets associated with each EU. If there were less than 10 sample results, the maximum detected value was used as the soil EPC. If there were 10 or more sample results in the dataset, then a statistical analysis was performed using the ProUCL software (version

5.0) developed by the USEPA to determine representative reasonable maximum exposure (RME) values for the EPC for each constituent. The RME value is typically the 95% Upper Confidence Limit (UCL) of the mean. For lead, the arithmetic mean for each depth was calculated for comparison to the Adult Lead Model (ALM)-based values (presented in **Table 7**).

Risk Ratios: The surface soil EPCs, subsurface soil EPCs, and pooled soil EPCs were compared to the USEPA RSLs for the Composite Worker and to site-specific Soil Screening Levels (SSLs) for the Construction Worker based on equations derived in the USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (OSWER 9355.4-24, December 2002). Risk ratios were calculated with a cancer risk of 1E-6 and a non-cancer HQ of 1. The risk ratios for the carcinogens were summed to develop a screening level estimate of the baseline cumulative cancer risk. The risk ratios for the non-carcinogens were segregated and summed by target organ to develop a screening level estimate of the baseline cumulative non-cancer HI.

For the Construction Worker, site-specific risk-based evaluations were completed for a range of potential exposure frequencies to determine the maximum allowable exposure frequency for the site-wide EU1-EXP that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for the individual target organs. This analysis indicated that the allowable exposure frequency before additional worker protections or more detailed job safety evaluations might be needed is 20 days.

There is no potential for direct human exposure to groundwater for a Composite Worker since groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized). In the event that construction/excavation leads to a potential Construction Worker exposure to groundwater during development, health and safety plans and management procedures shall be followed to limit exposure risk.

Assessment of Lead: For lead, the arithmetic mean concentrations for surface soils, subsurface soils, and pooled soils for each EU were compared to the applicable RSL (800 mg/kg) as an initial screening. If the mean concentrations for the EU was below the applicable RSL, the EU was identified as requiring no further action for lead. If a mean concentration exceeded the RSL, the mean values were compared to calculated ALM values (ALM Version dated 6/21/2009 updated with the 5/17/2017 OLEM Directive) with inputs of 1.8 for the geometric standard deviation and a blood baseline lead level of 0.6 ug/dL. The ALM calculation generates a soil lead concentration of 2,518 mg/kg, which represents the concentrations such that there would be no more than a 5% probability that fetuses exposed to lead would exceed a blood lead of 10 µg/L. If the arithmetic mean concentrations for the EU were below 2,518 mg/kg, the EU was identified as requiring no further action for lead. The lead averages are presented for surface, subsurface, and pooled

soils in **Table 7**. Neither surface, subsurface, nor pooled soils exceeded an average lead concentration of 800 mg/kg.

Assessment of TPH/Oil & Grease: EPCs were not calculated for TPH/Oil & Grease. Instead, the individual results were compared to the PAL set to a HQ of 1 (6,200 mg/kg). As shown in **Figure S3**, only three Oil & Grease soil sample results were above the PAL.

Risk Characterization Approach: Generally, if the baseline risk ratio for each non-carcinogenic COPC or cumulative target organ does not exceed 1, and the sum of the risk ratios for the carcinogenic COPCs does not exceed a cumulative cancer risk of 1E-5, then a no further action determination will be recommended. If the baseline estimate of cumulative cancer risk exceeds 1E-5 but is less than or equal to 1E-4, then capping of the EU will be considered to be an acceptable remedy for the Composite Worker. The efficacy of capping for elevated non-cancer hazard will be evaluated in terms of the magnitude of exceedance and other factors such as bioavailability. For the Construction Worker, cumulative cancer risks exceeding 1E-5 (but less than or equal to 1E-4) or HI values exceeding 1 will be mitigated via site-specific health and safety requirements.

It should be noted that industrial fill including processed slag aggregate sourced from the Tradepoint Atlantic property will be used at EU1; therefore, regardless of the findings of the Composite Worker baseline assessment, EU1 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the industrial fill materials. The goal of the SLRA is therefore to determine whether additional response actions beyond capping may be needed due to current conditions at the Site.

The USEPA's acceptable risk range is between 1E-6 and 1E-4. If the sum of the risk ratios for carcinogens exceeds a cumulative cancer risk of 1E-4, further analysis of site conditions will be required including the consideration of toxicity reduction in any proposal for a remedy. The magnitude of any non-carcinogen HI exceedances and bioavailability of the COPC will also dictate further analysis of site conditions including consideration of toxicity reduction in any proposal for a remedy.

3.3.2 SLRA Results and Risk Characterization

Soil data were divided into three datasets (surface, subsurface, and pooled) for Sub-Parcel B9-1 to evaluate potential exposure scenarios. Due to the grading activities including cut and fill which will be implemented during development at the Site, each of these potential exposure scenarios is relevant for the SLRA.

EPCs were calculated for each soil dataset (i.e., surface, subsurface, and pooled soils) in each EU. ProUCL output tables (with computed UCLs) derived from the data for each COPC in soils are provided as electronic attachments, with computations presented and EPCs calculated for COPCs

within each of the datasets. The ProUCL input tables are also included as electronic attachments. The results were evaluated to identify any samples that may require additional assessment or special management based on the risk characterization approach. The calculated EPCs for the surface, subsurface, and pooled exposure scenarios are provided in **Table 8**.

As indicated above, the EPCs for lead are the average (i.e., arithmetic mean) values for each dataset. A lead evaluation spreadsheet, providing the computations to determine lead averages for each dataset, is also included as an electronic attachment. The average and maximum lead concentrations are presented for each dataset in **Table 7**, which indicates that neither surface, subsurface, nor pooled soils exceeded an average lead concentration of 800 mg/kg.

Composite Worker Assessment:

Risk ratios for the estimates of potential EPCs for the Composite Worker baseline scenario prior to the placement of industrial fill at the Site are shown in **Table 9** (surface), **Table 10** (subsurface), and **Table 11** (pooled). The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Composite Worker	EU1 (2.28 acres)	Surface Soil	Dermal = 2	8E-6
		Subsurface Soil	Dermal = 2	2E-5
		Pooled Soil	none	1E-5
	EU2 (2.30 acres)	Surface Soil	none	4E-6
		Subsurface Soil	none	7E-6
		Pooled Soil	none	5E-6

Based on the risk ratios for Sub-Parcel B9-1, environmental capping is an acceptable remedy to be protective of future Composite Workers for the surface, subsurface, and pooled exposure scenarios for EU1. At EU1, the subsurface cancer risk value exceeded 1E-5, driven primarily by arsenic. Additionally, the surface and subsurface non-carcinogenic HI values for the dermal system exceeded 1, with elevated thallium as the primary risk driver. For EU1, capping and institutional controls (to maintain the integrity of the cap) are suitable measures for the protection of the future Composite Worker for both cancer risks and non-cancer hazards. The capping remedy will additionally be protective of slag aggregate which will be used as the primary fill material and pavement subbase at EU1.

At EU2, none of the cancer risk values exceeded 1E-5, and none of the non-carcinogenic HI values exceeded 1. Capping is not necessary to be protective of future Composite Workers for the surface, subsurface, and pooled exposure scenarios for EU2.

Construction Worker Assessment:

Ground intrusive activities which could result in potential Construction Worker exposures are expected to be limited primarily to utility installation tasks performed by specific work crews. Construction Worker risks were evaluated for several different exposure scenarios to determine the maximum exposure frequency for the site-wide EU1-EXP that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for any individual target organ. Risk ratios for the Construction Worker scenario using the selected duration (20 days) are shown in **Table 12** (surface), **Table 13** (subsurface), and **Table 14** (pooled). The variables entered for calculation of the site-specific Construction Worker SSLs (EU area, input assumptions, and exposure frequency) are indicated as notes on the tables. The spreadsheet used for computation of the site-specific Construction Worker SSLs is included as **Appendix B**. The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Construction Worker	Site-Wide EU1-EXP (5.00 acres) (20 exposure days)	Surface Soil	none	1E-7
		Subsurface Soil	none	1E-7
		Pooled Soil	none	8E-8

Using the selected exposure duration for the site-wide EU1-EXP (20 days), the carcinogenic risks were all less than 1E-5, and none of the non-carcinogens caused a cumulative HI to exceed 1 for any target organ system. These findings are below the acceptable limits for no further action established by the agencies. This evaluation indicates that additional site-specific health and safety requirements (beyond standard Level D protection) would be required only if the allowable exposure duration of 20 days were to be exceeded for an individual worker.

Development activities may exceed the allowable duration. In such an event, Construction Worker risks would be required to be mitigated, warranting additional site-specific health and safety requirements to be protective of workers. Upgraded Personal Protective Equipment (PPE) beyond standard Level D protection will be used for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied immediately and throughout this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE Standard Operational Procedure (SOP) provided as **Appendix C**.

Institutional controls will be required to be established for the protection of future Construction Workers in the event of any future long-term construction projects which could include intrusive

activities. The anticipated institutional controls, including notification requirements, health and safety requirements, and materials management requirements, are specified in Section 5.4.

3.3.3 Evaluation of RCRA Criteria (EU1)

Based on the SLRA results and the proposal to use industrial fill (including processed slag aggregate) within EU1, environmental capping and institutional controls is required within EU1 to mitigate potential Composite Worker risks.

Site-specific health and safety controls will be implemented to mitigate Construction Worker risks within the sub-parcel. This includes using modified Level D PPE. The modified Level D PPE requirements will be implemented throughout the project duration in accordance with the PPE SOP provided as **Appendix C**. Institutional controls will also be required to be established for the protection of future Construction Workers in the event of any future long-term construction projects which could include intrusive activities.

The proposed VCP capping remedy with institutional controls was evaluated for consistency with the RCRA Threshold Criteria and Balancing Criteria. The Threshold Criteria assess the overall protection of human health and the environment, as well as achievement of media cleanup objectives and control of sources of releases at EU1. The Balancing Criteria assess long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability; cost effectiveness; and community and State acceptance.

Threshold Criteria:

Protect Human Health and the Environment: The assessment against this criterion evaluates how the remedy, as a whole, protects and maintains protection of human health and the environment. This criterion is satisfied when response actions are complete. The purpose of this remedy is to provide a protective barrier between human site users and impacted materials, and to protect the environment by preventing surface water from contacting potentially impacted materials in place. The capping and institutional control remedy would eliminate risk to current and future industrial workers by preventing exposure to areas of EU1 where processed slag aggregate has been placed or where soil concentrations exceed a cancer risk of 1E-5 or a HI of 1. Groundwater does not present a direct human health hazard since there is no groundwater use on the property. Implementation of the proposed use restrictions will address the residual risk and will also protect future workers by eliminating or controlling potential exposure pathways, thus, reducing potential intake and contact of soil/groundwater COPCs by human receptors.

Achieve Media Cleanup Objective: The assessment against this criterion describes how the remedy meets the cleanup objective, which is risk reduction, appropriate for the expected current and reasonably anticipated future land use. The objective is to protect

current/future Composite Workers and Construction Workers from potential exposures to COPCs present in soil or groundwater at levels that may result in risks of adverse health effects. Given the controlled access and use restrictions, the proposed remedy will attain soil and groundwater objectives. The activity use restrictions will eliminate current and future unacceptable exposures to both soil and groundwater.

Control the Source of Releases: In its RCRA Corrective Action proposed remedies, USEPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the proposed remedy to reduce or eliminate, to the maximum extent practicable, further releases. Sampling results did not indicate localized, discernible source areas associated with the soil conditions observed at EU1. The control measures included in the proposed remedy, such as Materials Management Plan requirements and groundwater use restrictions, provide a mechanism to control and reduce potential further releases of COPCs. This is achieved by eliminating the potential for groundwater use and requiring proper planning for intrusive activities.

Balancing Criteria:

Long-Term Reliability and Effectiveness: The assessment against this criterion evaluates the long-term effectiveness of the remedy in maintaining protection of human health and the environment after the response objectives have been met. The primary focus of this criterion is the extent and effectiveness of the controls that may be required to manage the risk posed by slag aggregate, treatment residuals, and/or untreated wastes. The proposed capping remedies have been proven to be effective in the long-term at similar sites with similar conditions. The capping remedy will permanently contain the slag aggregate and other potentially contaminated media in place. In order for the cap to effectively act as a barrier, regular inspections will be performed pursuant to the Institutional Control Operations and Maintenance Plan (O&M Plan).

Institutional controls will be implemented to protect future Composite and Construction Workers against inadvertent contact with potentially impacted media. The anticipated institutional controls are specified in Section 5.4. The proposed remedy will maintain protection of human health and the environment over time by controlling exposures to the hazardous constituents potentially remaining in slag aggregate or existing on-site media. The long-term effectiveness is high, as use restrictions are readily implementable and easily maintained. Given the historical, heavily industrial uses of the Site and the surrounding area, including the presence of landfills, land and groundwater use restrictions are expected to continue in the long term.

Reduction of Toxicity, Mobility, or Volume of Waste: The assessment against this criterion evaluates the anticipated performance of specific technologies that a remedial action alternative may employ. The capping remedy will prevent the spread of

contaminants in wind-blown dust or stormwater and will prevent infiltration through the unsaturated zone from carrying contaminants to the groundwater. Thus, the mobility of contaminants will be reduced by the capping remedy.

Short-term Effectiveness: The assessment against this criterion examines how well the proposed remedy protects human health and the environment during the construction and implementation until response objectives have been met. This criterion also includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats. The risks to the Construction Worker during remedy implementation are mitigated by executing the modified Level D PPE requirements outlined in **Appendix C**. The short-term risk to site workers following these upgraded health and safety measures during implementation of the remedy will be low, leading to a high level of short-term effectiveness for protection of future site users and the environment. Short-term effectiveness in protecting on-site workers and the environment will be achieved through establishing appropriate management, construction, health and safety, and security procedures. Proper water management protocols will be implemented to prevent discharges offsite. Security will be used to maintain controlled access during construction.

Implementability: The assessment against this criterion evaluates the technical and administrative feasibility, including the availability of trained and experienced personnel, materials, and equipment. Technical feasibility includes the ability to construct and operate the technology, the reliability of the technology, and the ability to effectively monitor the technology. Administrative feasibility includes the capability of obtaining permits, meeting permit requirements, and coordinating activities of governmental agencies. The proposed capping remedy for the Composite Worker area will use readily available, typically acceptable, and proven technologies.

Cost Effectiveness: The assessment against this criterion evaluates the capital costs, annual O&M costs, and the net present value (NPV) of this remedy relative to alternatives. The capping remedy remedial costs would be incurred as part of the proposed site development, regardless of the findings of the SLRA.

State Support / Agency Acceptance: The Agencies have been involved throughout the Site investigation process. The proposed use restrictions included in the proposed remedy are generally recognized as commonly employed measures for long-term stewardship.

A capping remedy with institutional controls would satisfy the CERCLA Threshold Criteria and the Balancing Criteria and would do so in a manner that ensures reliable implementation and effectiveness. The remedy is cost-effective and consistent with the proposed development plan for EU1.

3.3.4 Evaluation of RCRA Criteria (EU2)

Based on the data obtained from the characterization of surface and subsurface soils, results from the SLRA indicate that no measures are required within EU2 to mitigate potential Composite Worker risks.

As with EU1, site-specific health and safety controls will be implemented to mitigate Construction Worker risks within the sub-parcel. This includes using modified Level D PPE. The modified Level D PPE requirements will be implemented throughout the project duration in accordance with the PPE SOP provided as **Appendix C**. Institutional controls will also be required to be established for the protection of future Construction Workers in the event of any future long-term construction projects which could include intrusive activities.

The undisturbed scenario (i.e., the scenario which does not require environmental capping) has been evaluated for consistency with the CERCLA Threshold Criteria and the Balancing Criteria as described below. The Threshold Criteria assess the overall protection of human health and the environment, the achievement of media cleanup objectives, and the control of sources of releases at EU2. The Balancing Criteria assess long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability; cost effectiveness; and community and State acceptance.

Threshold Criteria:

Protect Human Health and the Environment: The assessment against this criterion evaluates how the undisturbed scenario, as a whole, protects and maintains protection of human health and the environment. The undisturbed scenario evaluated in the SLRA indicates that risks to current and future industrial workers are acceptable despite a limited number of detections of soil constituents in excess of the Composite Worker RSLs. Groundwater does not present a human health hazard since there is no groundwater use. Implementation of the proposed institutional controls will address the residual risk and will also protect hypothetical current or future Construction Workers by eliminating or controlling potential exposure pathways, thus, reducing potential intake and contact of soil and groundwater COPCs by human receptors.

Achieve Media Cleanup Objective: The assessment against this criterion describes how the undisturbed scenario meets the cleanup objective, which is risk reduction, appropriate for the expected current and reasonably anticipated future land use. The objective is to protect workers (current and future Composite Worker and future Construction Worker) from potential exposures to site-related soil or groundwater constituents at levels that may result in risks of adverse health effects. Given the controlled access and use restrictions, the proposed undisturbed scenario will attain soil and groundwater objectives.

Control the Source of Releases: In its RCRA Corrective Action proposed remedies, USEPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the undisturbed scenario to reduce or eliminate, to the maximum extent practicable, further releases. None of the soils remaining on-site were identified as exhibiting characteristics of hazardous waste. Sampling results did not indicate localized, discernible source areas associated with the soil conditions observed at EU2. The control measures included with the proposed undisturbed scenario, such as Materials Management Plan requirements and groundwater use restrictions, provide a mechanism to control and reduce potential further releases of COPCs. This is achieved by eliminating the potential for groundwater use and requiring proper planning associated with future intrusive activities.

Balancing Criteria:

Long-Term Reliability and Effectiveness: The assessment against this criterion evaluates the long-term effectiveness of the undisturbed scenario in maintaining protection of human health and the environment. The primary focus of this criterion is the extent and effectiveness of the controls that may be required to manage the risk posed by treatment residuals and/or untreated wastes. The Composite Worker evaluation indicated no long-term risks for an industrial worker which might require mitigation. Institutional controls (deed restrictions) will be implemented to protect future Construction Workers against disturbances of the soil that might lead to inadvertent long-term contact with potentially impacted soils or groundwater. These institutional controls are anticipated to include a restriction prohibiting the use of groundwater for any purpose, a written notice to the Agencies of any future soil disturbance activities, health and safety requirements for any excavations, and proper management and characterization of any removed material. The long-term effectiveness is high, as institutional controls are readily implementable and easily maintained. Given the historical, heavily industrial uses of the Site and the surrounding area, including the presence of landfills, industrial land uses of this area and existing groundwater use restrictions are expected to continue in the long term.

Reduction of Toxicity, Mobility, or Volume of Waste: The assessment against this criterion evaluates the anticipated performance of specific technologies that a remedial action alternative may employ. Environmental capping is not necessary to reduce toxicity, mobility, or volume of waste in this case. No capping remedy is proposed for EU2.

As summarized in the B9-009-SB Excavation Report (dated August 31, 2022), an excavator was used to remove the soil in a 10-foot by 10-foot excavation down to the concrete slab at approximately 6 inches bgs. This resulted in a reduction in toxicity and

volume of the waste; the Oil & Grease impacts at B9-009-SB are no longer a location of potential concern.

Short-term Effectiveness: The assessment against this criterion examines how well the proposed undisturbed scenario protects human health and the environment during the construction and implementation. This criterion also includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats. The results of the SLRA indicate that risks to the Construction Worker during implementation are mitigated by limiting workers to the specific exposure duration given in the SLRA (20 days). The short-term risk to site workers following general health and safety measures during implementation of the remedy will be low. Short-term effectiveness in protecting on-site workers and the environment will be achieved through establishing appropriate management, construction, health and safety, and security procedures. Proper water management protocols will be implemented to prevent discharges offsite. Security will be used to maintain controlled access during construction to be protective of site visitors.

Implementability: The assessment against this criterion evaluates the technical and administrative feasibility, including the availability of trained and experienced personnel, materials, and equipment. Technical feasibility includes the ability to construct and operate the technology, the reliability of the technology, and the ability to effectively monitor the technology. Administrative feasibility includes the capability of obtaining permits, meeting permit requirements, and coordinating activities of governmental agencies. There are no concerns related to implementability in this case.

Cost Effectiveness: The assessment against this criterion evaluates the capital costs, annual O&M costs, and the NPV of this remedy relative to other alternatives. The undisturbed scenario does not have an associated remedial cost, regardless of the presence of soil containing COPCs.

State/Support Agency Acceptance: The Agencies have been involved throughout the Site investigation process. The proposed use restrictions included in this RADWP are generally recognized as commonly employed measures for long-term stewardship. Ultimately Agency support will be evaluated based on comments received during the public comment period.

The undisturbed scenario with institutional controls will satisfy the CERCLA Threshold Criteria and Balancing Criteria and will do so in a manner that ensures rapid and reliable implementation and effectiveness. The undisturbed scenario is cost-effective and consistent with the proposed development plan for EU2.

4.0 PROPOSED SITE DEVELOPMENT PLAN

Tradepoint Atlantic is proposing a construction equipment storage and repair yard on Sub-Parcel B9-1. The proposed development will include permanent improvements on approximately 4.58 acres located primarily within Parcel B9, but extending slightly onto Parcel B5. The proposed future use of Sub-Parcel B9-1 is Tier 3 – Industrial. The remainder of Parcel B5 and Parcel B9 will be addressed in separate development plans in accordance with the requirements of the ACO that will include RADWPs, if necessary. Outside of the main development area, temporary external construction worker areas with a total area of approximately 0.42 acres will be utilized to install the facility entrance and subgrade utility connections for the project. The temporary work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction work is covered by this RADWP. The Site (4.58 acres encompassing Sub-Parcel B9-1; excluding the temporary construction worker areas) will be partially capped by surface engineering controls. EU1 will be capped and EU2 will not be capped.

Certain compounds are present in the soils located near the surface and in the subsurface at concentrations in excess of the PALs. Therefore, soil is considered a potential media of concern. Potential risks to future adult workers associated with impacts to soil and groundwater exceeding the PALs will be addressed through a remedy consisting of surface engineering controls (capping for EU1) and institutional controls (deed restrictions for B9-1). The development plan provides for a containment remedy and institutional controls that will mitigate future adult workers from contacting impacted soil at the Site. In addition, Tradepoint Atlantic has proposed the use of processed slag aggregate as the primary fill material and pavement subbase within EU1. The placement of materials other than approved clean fill, such as slag aggregate, requires the installation of surface engineering controls regardless of the existing soil conditions. No slag is proposed for use within EU2. If fill is needed within EU2, then it will include MDE approved VCP clean fill materials only.

Future Construction Workers may contact impacted surface and/or subsurface soil during earth movement activities associated with construction activities, including within the temporary external construction worker areas outside of the primary development area. The findings of the Construction Worker SLRA indicated that using the site-specific 20-day exposure frequency for the site-wide EU1-EXP, the screening level estimates of Construction Worker cancer risk were less than 1E-5 and no HI values above 1 were identified for any target organ system (the acceptable thresholds for no further action).

Development activities at the Site are expected to exceed the allowable duration; therefore additional site-specific health and safety requirements will be implemented as a conservatism to be protective of workers. Upgraded PPE beyond standard Level D protection will be used in conjunction with the property-wide Health and Safety Plan (HASP) for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE

requirements which will be applied throughout this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**.

A restriction prohibiting the use of groundwater for any purpose at the Site will be included as an institutional control in the NFA and COC issued by the Agencies, and a deed restriction prohibiting the use of groundwater will be filed. The groundwater use restriction will protect future Composite Workers from potential direct exposures. Proper water management is required to prevent unacceptable discharges or risks to Construction Workers during development. Work practices and health and safety plans governing groundwater encountered during excavation activities will provide protection for Construction Workers involved with development at the Site.

The development plan for the Site is shown on **Figure 2**. The process of constructing the proposed construction equipment storage and repair yard will involve the tasks listed below. Documentation of the outlined tasks and procedures will be provided in a Sub-Parcel B9-1 Development Completion Report.

4.1 Response Phase – Groundwater Network Modification

There are no temporary groundwater sample collection points or permanent monitoring wells currently located within the proposed LOD. There are several shallow wells located outside of the Site, as shown on **Figure 4**, which are not expected to be impacted by the proposed development work.

4.2 Development Phase

4.2.1 Erosion and Sediment Control Installation

Installation of erosion and sediment controls will be completed in accordance with the requirements of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control prior to any construction at the Site. Any soils within EU1 which are disturbed during the installation of erosion and sediment controls will be placed on-site below the cap.

4.2.2 Grading and Site Preparation

Grading activities including both cut and fill will occur within the Sub-Parcel B9-1 boundary. Any material that is not suitable for compaction will be excavated and replaced with subbase material, although it is not anticipated that poor soils will be encountered. Borrow materials will be obtained from MDE-approved sources and will be documented prior to transport to the Site. Processed slag aggregate sourced from the Tradepoint Atlantic property will be used as fill within EU1 only. Other materials approved by the MDE for industrial use may also be used as fill, but the placement of materials other than approved clean fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping). Fill sources shall be free of organic material, frozen material,

or other deleterious material. In the case that there is excess material (not anticipated), the spoils will be stockpiled at a suitable location and dealt with in accordance with the Materials Management Plan (MMP) for the Sparrows Point Facility (Jenkins Environmental, Inc., August 17, 2021). This work will be coordinated with MDE accordingly. No excess material will leave the 3,100-acre property without prior approval from MDE.

4.2.3 Installation of Structures and Underground Utilities

The lots and other infrastructure associated with the development of Sub-Parcel B9-1 will be installed as shown on **Figure 2**. Soils relocated or removed during construction or utility trenches may be replaced on-site below the cap based on field observations by the Environmental Professional (EP). Additional protocols for soil monitoring during the installation of utilities at the Site are provided in Section 5.1.2. Any water removed will be sampled (if necessary) as described in Section 5.2 and (if acceptable) sent to the on-site Humphrey Creek Wastewater Treatment Plant (HCWWTP).

4.2.4 Paving

As shown on **Figure 6**, a significant portion of EU1 will be covered with paving. The paved areas will receive a layer of subbase material which will consist of compacted aggregate base, which may include processed slag aggregate sourced from the Tradepoint Atlantic property. The placement of processed slag aggregate or materials other than MDE-approved clean fill will necessitate that EU1 will be subject to surface engineering controls (i.e., capping).

The required minimum thicknesses of all site-wide pavement sections which will serve as surface engineering controls are shown in the minimum capping section details provided in **Appendix E**. All paved areas at the Site will be installed with a minimum of 4 inches of compacted aggregate base and a minimum of 4 inches of overlying pavement surface (asphalt or concrete), which meet these required minimum thicknesses.

4.2.5 Stormwater Management

New stormwater infrastructure will be installed throughout the Site and will discharge to the Pennwood Canal. Based on the shallow groundwater elevation measurements collected during the site-wide groundwater elevation investigation, excavations may encounter groundwater. As shown on **Figure 7**, the site-wide shallow groundwater elevations range from approximately 6 feet amsl (in the northwest) to 4 feet amsl (in the east) – or approximately 6 feet bgs (assuming ground surface elevation ranges from 10 to 12 feet amsl). Water removed will be managed as described in Section 5.2.

The stormwater management systems for each parcel are reviewed and approved by Baltimore County for each individual development project.

5.0 DEVELOPMENT IMPLEMENTATION PROTOCOLS

5.1 DEVELOPMENT PHASE

This plan presents protocols for the handling of soils and fill materials in association with the development of Sub-Parcel B9-1. In particular, this plan highlights the minimum standards for construction practices and managing potentially contaminated materials to reduce potential risks to workers and the environment.

Several exceedances of the PALs were identified in soil samples across the Site. The PALs are set based on USEPA's RSLs for industrial soils, or other direct guidance from the Agencies. Because PAL exceedances can present potential risks to human health and the environment at certain concentrations, this plan presents material management and other protocols to be followed during the work to adequately mitigate potential risks from such materials remaining on-site during the development phase. There were no locations in the proposed Site boundary with soil exceedances of the special management criteria for PCBs (50 mg/kg), lead (10,000 mg/kg), or TPH (6,200 mg/kg). As noted in Section 3.2.2, oil & grease exceedances were observed at three locations (B9-005-SB, B9-009-SB, and B9-014-SB), one of which (B9-009) was removed during excavation activities. NAPL was not detected in any soil borings or on the water table in any piezometers or monitoring wells within the proposed development area.

Following completion of the SLRA, the findings of the Construction Worker evaluation indicated that using the site-specific 20-day exposure frequency for the site-wide EU1-EXP, the screening level estimates of Construction Worker cancer risk were less than 1E-5 and no HI values above 1 were identified for any target organ system (the acceptable thresholds for no further action). Development activities at the Site may exceed the allowable duration of 20 days, and Construction Worker risks must be mitigated to facilitate the proposed construction. Upgraded PPE beyond standard Level D protection will be used in conjunction with the HASP for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied throughout this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**.

Based on the characterization of surface and subsurface soils and the associated SLRA findings, surface engineering controls are an acceptable remedy to be protective of future adult Composite Workers at EU1. In addition, Tradepoint Atlantic has proposed the use of processed slag aggregate as the primary fill material and pavement subbase within EU1. The placement of materials other than approved clean fill, such as slag aggregate, requires the installation of surface engineering controls (i.e., capping) regardless of the existing soil conditions. The proposed capping sections

will meet the required minimum thicknesses for surface engineering controls, which are provided in **Appendix E**.

5.1.1 Erosion/Sediment Control

Erosion and sediment controls will be installed prior to commencing work in accordance with the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. The erosion and sediment controls will be approved by the Agencies. In addition, the following measures will be taken to prevent contaminated soil from exiting the Site:

- Stabilized construction entrance will be placed at site entrance.
- A dry street sweeper will be used as necessary on adjacent roads, and the swept dust will be collected and properly managed.
- Accumulated sediment removed from silt fence, and sediment traps if applicable, shall be periodically removed and returned to the Site.

5.1.2 Soil Excavation and Utility Trenching

A pre-excavation meeting shall be held to address proper operating procedures for working on-site and monitoring excavations and utility trenching in potentially contaminated material. This meeting shall include the construction manager and the EP providing oversight on the project. During the meeting, the construction manager and the EP shall review the proposed excavation/trenching locations and any associated utility invert elevations. The construction manager will be responsible for conveying all relevant information regarding excavation/grading and/or utility work to the workers who will be involved with these activities. The HASP and PPE SOP for the project shall also be reviewed and discussed.

The EP will provide oversight of soil excavation/trenching activities as described in Section 5.6. Soil excavation/trenching will occur during various phases of construction. In general, and based on the existing sampling information, all excavated materials are expected to be suitable for replacement on the Site. However, the EP will monitor the soil excavation activities for signs of significantly contaminated material which may not be suitable for reuse (as described below). The EP will also be responsible for monitoring organic vapor concentrations in the worker breathing zone within utility trenches and excavations to determine whether any increased level of health and safety protection is required.

To the extent practical, all excavation activities should be conducted in a manner to minimize double or extra handling of materials. Stockpiles shall be stored in a location that is not subjected to concentrated stormwater runoff. Stockpiles shall be managed as necessary to prevent the erosion and off-site migration of stockpiled materials, and in accordance with the applicable provisions of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. Soil designated for replacement on-site which does not otherwise exhibit evidence of

contamination (as determined by the EP) may be managed in large stockpiles (no size restriction) as long as they remain within the erosion and sediment controls.

All utility trenches will be backfilled with bedding and backfill materials approved by the MDE for industrial use. Utility trench backfill within EU2 will be MDE approved VCP clean fill materials only. A general utility cross section is provided as **Appendix F**. Additional preventative measures will be required if evidence of petroleum contamination is encountered, to prevent the discharge to, or migration of, petroleum product along a utility conduit. Contingency measures have been developed to ensure that utilities will be constructed in a manner that will prevent the migration of any encountered NAPL, and that excavated material will be properly managed. The Utility Excavation NAPL Contingency Plan (**Appendix G**) provides protocols to be followed if NAPL is encountered during the construction activities. Preventative measures to inhibit the spread of petroleum product will be conducted in accordance with this plan.

The EP will monitor all soil excavation and utility trenching activities for signs of potential contamination. In particular, soils will be monitored with a hand-held photoionization detector (PID) for potential VOCs and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of significant contamination. If screening of excavated materials by the EP indicates the presence of conditions of potential concern (i.e., sustained PID readings greater than 10 ppm, visual staining, unsuitable waste materials, etc.), such materials shall be segregated for additional sampling and special management.

Excavated material exhibiting evidence of significant contamination shall be placed in stockpiles (not to exceed 500 cubic yards) on polyethylene sheeting and covered with polyethylene sheeting to minimize potential exposures and erosion when not in use. Materials stockpiled due to evidence of contamination will be sampled in accordance with waste disposal requirements and transported to an appropriate permitted disposal facility.

Excavated material that is visibly impacted by NAPL will be segregated and managed in accordance with the requirements specified in the Utility Excavation NAPL Contingency Plan. Excavated material with indications of possible NAPL contamination will also be containerized or placed in a stockpile (not to exceed 500 cubic yards) on polyethylene sheeting and sampled to characterize the material for appropriate disposal. The Agencies will be notified if such materials are encountered during excavation or utility trenching activities.

5.1.3 Soil Sampling and Disposal

Excavated materials that are determined by the EP to warrant sampling and analysis because of elevated PID readings or other indications of potential contamination shall be sampled and analyzed to determine how the materials should be managed. If excavated and stockpiled, such materials should be placed on a polyethylene or equivalent tarp to minimize potential exposures and erosion. All stockpiled soil may be considered for use as fill at this Site or on other areas of

the property depending on the analytical results. A summary of sampling including a description of the material, estimated volume, and sampling parameters will be provided to the Agencies in the Development Completion Report.

Soil material may be taken to an appropriate non-hazardous landfill (including Greys Landfill) for proper disposal if the concentrations of excavated sampled materials indicate that the materials are not hazardous, but still are not suitable for reuse. Soil material that is determined to be a hazardous waste shall be shipped off-site in accordance with applicable regulations to an appropriate and permitted RCRA disposal facility. The quantities of all materials that require disposal, if any, will be recorded and identified in the Development Completion Report.

5.1.4 Fill

Processed slag aggregate sourced from the Tradepoint Atlantic property will be used as the primary fill material within EU1 for this project. The placement of processed slag aggregate or materials other than approved clean fill will necessitate that EU1 will be subject to surface engineering controls (i.e., capping). Soil excavated on the Sub-Parcel has been determined to be suitable for re-use within EU1 below the surface engineering controls (capping), unless such materials are determined by the Agencies to be unsuitable for use as outlined in Section 5.1.2 and Section 5.1.3. If fill is needed within EU2, then it will include MDE approved VCP clean fill materials only.

All over-excavated utility trenches will be backfilled with bedding and backfill approved by the MDE for industrial use. Utility trench backfill within EU2 will be MDE approved VCP clean fill materials only. Soil removed from utility trenches cannot be used as fill within the utility trenches unless such materials are approved for this use by the VCP. As with structural fill, processed slag aggregate and other materials approved for industrial use can be used as backfill in utility trenches on EU1 if the area will be covered by a VCP cap. Any utility backfill which will extend into the cap on EU1 (i.e., top 2 feet of backfill in landscaped areas) must meet the VCP clean fill requirements, and a geotextile marker fabric will be placed between the VCP clean fill and any underlying material. Materials permanently placed in areas outside of the Site boundary (i.e., within the temporary external construction worker areas outside of Sub-Parcel B9-1) must meet the VCP clean fill requirements or be otherwise approved by the MDE prior to placement. A general utility detail drawing is provided as **Appendix F**. Material imported to the Site will be screened according to MDE guidance for suitability.

5.1.5 Dust Control

General construction operations, including soil excavation and transport, and trenching for utilities will be performed at the Site. These activities are anticipated to be performed in areas of soil impacted with COPCs. Best management practices should be undertaken at the Sparrows Point property as a whole to prevent the generation of dust which could impact other areas of the property

outside of the immediate work zone. To limit worker exposure to contaminants borne in dust and windblown particulates, dust monitoring will be performed during dust-generating activities.

The Environmental Professional (EP) will be responsible for the Site dust monitoring program. This will consist of both monitoring for visible dust as well as real-time dust monitoring. If sustained visible dust is observed, the General Contractor will implement dust suppression methods to address dust levels at the Site. Such methods may include an increase in the frequency of water trucks spraying vehicle routes, covering of material piles with plastic sheeting, or decreasing drop heights of material from excavation equipment.

Real-time dust monitoring will be implemented using Met One Instruments, Inc. E-Sampler dust monitors or equivalent real-time air monitoring devices will be utilized. Continuous dust monitoring will be performed in the work area as well as perimeter monitors at upwind and downwind locations based on the prevailing wind direction predicted for that day. The prevailing wind direction will be assessed during the day, and the positions of the perimeter monitors may be adjusted if there is a substantial shift in prevailing wind direction.

The action level for determining the need for implementing additional dust suppression methodologies is 3.0 milligrams per cubic meter (mg/m^3). The lowest of the site-specific dust action levels, Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL), and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) was selected. If sustained dust concentrations exceed the action level (3.0 mg/m^3) at monitoring locations as a result of conditions occurring at the Site, operations will be stopped temporarily until additional dust suppression can be implemented. Operations may resume once monitoring indicates that dust concentrations are below the action level.

Once all dust-generating activities are complete, the dust monitoring program may be discontinued.

5.2 WATER MANAGEMENT

This plan presents the protocols for handling any groundwater or surface water that needs to be removed to facilitate construction of the proposed Sub-Parcel B9-1 development.

5.2.1 Groundwater PAL Exceedances

Groundwater samples were collected during the preceding Phase II Investigations from five monitoring wells surrounding the Site. Aqueous PAL exceedances in groundwater in the vicinity of the development LOD included both inorganics and organic compounds. The aqueous PAL exceedances obtained during the Phase II Investigation are summarized on **Figure GW1**. There are no concerns related to potential VI risks/hazards at the Site.

While the concentrations of PAL exceedances are not deemed to be a significant human health hazard for future workers since there is no on-site groundwater use which could lead to direct

exposures, proper water management is required during construction to prevent unacceptable discharges or risks to Construction Workers.

5.2.2 Dewatering

Dewatering may be necessary to facilitate the placement and compaction of structural fill as well as during ground intrusive work such as the installation of underground utilities or within excavations/trenches. **Figure 7** displays the groundwater elevations underlying the Site for the shallow aquifer zone, based on prior investigation data. If dewatering is required during construction, it shall be done in accordance with all local, state, and federal regulations. Water that collects in excavations/trenches due to intrusion of groundwater, stormwater, and/or dust control waters will be managed via one of the following options:

- Transported to be treated at the HCWWTP, following any pretreatment necessary and discharged in accordance with NPDES Permit No. 90-DP-0064; Special Conditions; A.1, A.4, or A.6 (whichever is currently in effect); Effluent Limitations and Monitoring Requirements;
- Discharged to the Baltimore County sanitary sewer system;
- Discharged locally in accordance with the requirements of Special Condition AF, Section 2, Mobile Dewatering Collection and Treatment Unit of NPDES Permit No. 90-DP-0064; or
- Off-site disposal.

The Agencies will be notified which option is selected prior to the generation of groundwater.

If water is sent to the HCWWTP via the Tin Mill Canal, trucking, or direct discharge to a drainage system that flows to the HCWWTP, applicable outfall dewatering fluid samples will be evaluated pursuant to the HCWWTP Constituent Threshold Limits for Dewatering Activities related to Remediation, Development, and Capping Protocol. Water discharged to the TMC will be pumped through a filter bag, weir frac tank, or equivalent to remove suspended solids prior to discharge.

The EP will inspect water that collects in the excavations/trenches. If the water exhibits indications of significant contamination (e.g., sheen, odor, discoloration, presence of product), the water may be sampled to confirm conditions. If the results of the analyses are above the threshold levels listed below, groundwater at the Site will be further evaluated to confirm acceptable treatment by the HCWWTP, or will be evaluated to design an appropriate pre-treatment option. Alternatively, the water may be disposed of at an appropriate off-site facility.

Analysis	Threshold Levels
Total metals by USEPA Method 6020A	1,000 ppm
PCBs by USEPA Method 8082	>Non-Detect
SVOCs by USEPA Method 8270C	1 ppm

- VOCs by USEPA Method 8260B 1 ppm
- Oil & Grease by USEPA Method 1664 200 ppm
- TPH-DRO by USEPA Method 8015B 200 ppm
- TPH-GRO by USEPA Method 8015B 200 ppm

Documentation of water testing and the selected disposal option will be reported to the Agencies in the Development Completion Report. Associated permits or permit modifications related to dewatering will also be provided in the Development Completion Report.

5.3 HEALTH AND SAFETY

A property-wide HASP has been developed and is provided with this RADWP (as an electronic attachment) to present the minimum requirements for worker health and safety protection for all development projects. All contractors working on the Site must prepare their own HASP that provides a level of protection at least as much as that provided by the attached HASP. Alternately, on-site contractors may elect to adopt the HASP provided.

General health and safety controls (level D protection) are adequate to mitigate potential risk to Construction Workers conducting ground intrusive activities for a duration of up to 20 exposure days. However, certain ground intrusive activities at the Site (utility installations for specific crews) may exceed the allowable duration. Therefore, modified Level D PPE will be used for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. Health and safety controls outlined in the HASP and PPE SOP will mitigate any potential risk to Construction Workers from contacting impacted soil and groundwater during development. The modified Level D PPE requirements planned for this development project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**. The EP will be responsible for monitoring organic vapor concentrations in the worker breathing zone within the utility trenches and excavations to determine whether any increased level of health and safety protection (including engineering controls and/or PPE) is required.

Prior to commencing work, the contractor must conduct an on-site safety meeting for all personnel. All personnel must be made aware of the HASP and the PPE SOP. Detailed safety information shall be provided to personnel who may be exposed to COPCs. Workers will be responsible for following established safety procedures to prevent contact with potentially contaminated material.

5.4 INSTITUTIONAL CONTROLS (FUTURE LAND USE CONTROLS)

Long-term conditions related to future use of the Site will be placed on the RADWP approval, NFA, and COC. These conditions are anticipated to include the following:

- A restriction prohibiting the use of groundwater for any purpose at the Site and a requirement to characterize, containerize, and properly dispose of groundwater in the event of deep excavations encountering groundwater.
- Notice to the Agencies at least 30 days prior to any future soil disturbances that are expected to breach the approved capping remedy (i.e., through the pavement cap or marker fabric in landscaped areas).
- Notice to the USEPA at least 30 days prior to any future soil disturbances that are expected to breach the approved capping remedy, only if the proposed duration of ground intrusive activity would exceed the allowable exposure duration determined in the SLRA and the contractor will not use the modified Level D PPE specified in the approved SOP.
- Requirement for a HASP in the event of any future excavations at the Site.
- Complete appropriate characterization and disposal of any material excavated/pumped at the Site in accordance with applicable local, state, and federal requirements.
- Implementation of inspection procedures and maintenance of the containment remedies.

The owner/operator will file the above deed restrictions as defined by the MDE-VCP in the NFA and COC.

5.5 Post Remediation Requirements

Post remediation requirements will include compliance with the conditions specified in the NFA, COC, and the deed restrictions recorded for the Site. Deed restrictions will be recorded within 30 days after receipt of the final NFA. In addition, the Agencies will be provided with a written notice of any future excavations (as applicable) in accordance with the requirements given in Section 5.5. Written notice of planned excavation activities will include the proposed date(s) for the excavation, location of the excavation, health and safety protocols (as required), clean fill source (as required), and proposed characterization and disposal requirements. Written notice may consist of email correspondence and/or hard copy correspondence.

Additional requirements will include inspection procedures and maintenance of the containment remedies to minimize degradation which could lead to future exposures, as well as continued perimeter groundwater monitoring. An O&M Plan will be submitted for Agency approval and will include long-term inspection and maintenance requirements for the capped areas of the Site. The responsible party will perform cap inspections, perform maintenance of the cap, and retain inspection records, as required by the O&M Plan.

5.6 CONSTRUCTION OVERSIGHT

Construction Oversight by an EP will ensure and document that the project is built as designed and appropriate environmental and safety protocols are followed. Upon completion, the EP will certify that the project is constructed in accordance with this RADWP.

The EP will monitor all soil excavation and utility trenching activities for signs of contamination that may indicate materials that are not suitable for reuse. In particular, soils will be monitored with a hand-held PID for potential VOC impacts, and will also be visually inspected for staining, petroleum waste materials, or other indications of significant contamination. If screening of excavated materials by the EP indicates the presence of conditions of potential concern (i.e., sustained PID readings greater than 10 ppm, visual staining, unsuitable waste materials, etc.), such materials shall be segregated for additional sampling and special management (as described in Section 5.1.2; Soil Excavation and Utility Trenching). The EP will also perform routine periodic breathing zone monitoring and PPE spot checks during ground intrusive activities. The EP will also inspect any water that collects in the excavations/trenches on an as-needed basis to coordinate appropriate sampling prior to disposal (as described in Section 5.2.2; Dewatering).

Daily inspections, as necessary, will be performed during general site grading and cap construction activities to verify that appropriate fill materials are being used (as described in Section 5.1.4; Fill), dust monitoring and control measures are being implemented as appropriate (as described in Section 5.1.5; Dust Control), the requirements of the HASP and the PPE SOP are being enforced by the designated Site Safety Officer (as described in Section 5.4; Health and Safety), and surface engineering controls are being installed with the appropriate thicknesses (shown on the RADWP attachments). Oversight by an EP will not be required during construction activities which do not have a significant environmental component, such as above-grade construction.

Records will be developed by the EP to document:

- Compliance with soil screening requirements;
- Proper water management, including documentation of any testing and water disposal;
- Observations of construction activities during site grading and cap construction; and
- Proper cap thickness and construction.

6.0 PERMITS, NOTIFICATIONS AND CONTINGENCIES

The participant and their contractors will comply with all local, state, and federal laws and regulations by obtaining any necessary approvals and permits to conduct the activities contained herein. Any permits or permit modifications from State or local authorities will be provided as addenda to this RADWP.

A grading permit is required if the proposed grading disturbs over 5,000 square feet of surface area or over 100 cubic yards of earth. A grading permit is required for any grading activities in any watercourse, floodplain, wetland area, buffers (stream and within 100 feet of tidal water), habitat protection areas or forest buffer areas (includes forest conservation areas). Based on the scope of proposed earth disturbance, a grading permit will be required as part of this development project. Erosion and Sediment Control Plans will be submitted to, and approved by, the Agencies prior to initiation of land disturbance for development.

Contingency measures will include the following:

1. The Agencies will be notified immediately of any previously undiscovered contamination, previously undiscovered storage tanks and other oil-related issues, and citations from regulatory entities related to health and safety practices.

2. Any significant change to the implementation schedule will be noted in the progress reports to Agencies.

3. Modified Level D PPE will be used for the entire scope of ground intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied during this project are outlined in the PPE SOP provided as **Appendix C**. If it is not possible to implement the PPE SOP as provided, the agencies will be notified and a RADWP Addendum will be submitted to detail any appropriate mitigative measures.

7.0 IMPLEMENTATION SCHEDULE

Progress reports will be submitted to the Agencies on a quarterly basis. Each quarterly progress report will include, at a minimum, a discussion of the following information regarding tasks completed during the specified quarter:

- Development Progress
- Soil Management (imported materials, screening, stockpiling)
- Soil Sampling and Disposal
- Water Management
- Dust Monitoring
- Notable Occurrences (if applicable)
- Additional Associated Work (if applicable)

The proposed implementation schedule is shown below:

Task	**Proposed Completion Date**
Anticipated RADWP Approval	Complete
Development:	
Installation of Erosion and Sediment Controls	Complete
Slag (or Alternative Fill) Delivery and Placement	Complete
Site Preparation / Grading	Complete
Utility Installations	Complete
Submittal of Development Completion Report/ Notice of Completion of Remedial Actions*	August 2023
Request for NFA from the Agencies	August 2023
Recordation of institutional controls in the land records office of Baltimore County	Within 30 days of receiving the approval of NFA from the Agencies

Submit proof of recordation with Baltimore County	Upon receipt from Baltimore County

*Notice of Completion of Remedial Actions will be prepared by Professional Engineer registered in Maryland and submitted with the Development Completion Report to certify that the work is consistent with the requirements of this RADWP and the Site is suitable for occupancy and use.

FIGURES


LEGEND
Sub-Parcel B9-1 Boundary
Site Boundary
Parcel Boundaries
Private Property
Parcel A9
Parcel A13
Parcel A5
Parcel A7
Parcel A14
Parcel A11
Parcel A8
Parcel A12
Parcel A15
Parcel A2
Parcel A17
Parcel A18
Parcel A16
Parcel A6
Parcel A4
Parcel A10
Parcel A3
Parcel A1
Parcel B6
Parcel B8
Parcel B14
Parcel B21
Parcel B22
Parcel B16
Parcel B24
Parcel B15
Parcel B23
Parcel B7
Parcel B25
Parcel B1
Parcel B2
Parcel B3
Parcel B17
Parcel B19
Parcel B4
Parcel B5
B9-1
Parcel B9
Parcel B18
Parcel B10
Parcel B13
Parcel B20
Parcel B11
Parcel B12
Tradepoint Atlantic
Area A and Area B Parcels
January 11, 2023
Figure
1
ARM Group LLC
Engineers and Scientists
0 500 1,000 2,000
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
Area A: Project 210101
Area B: Project 210102
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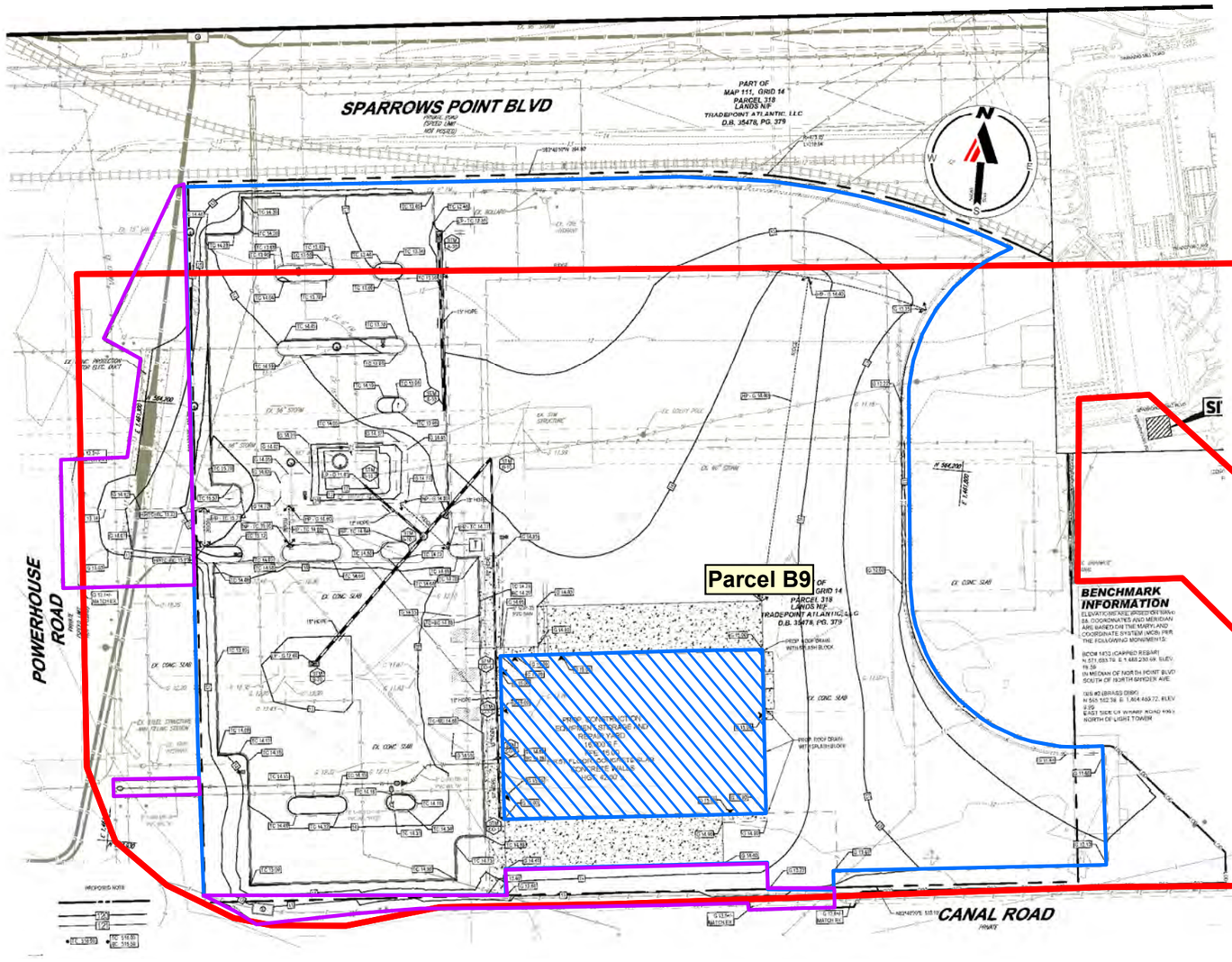
Parcel B19



Parcel B5

Legend

- Site Building
- Site Boundary
- External Construction Area
- Parcel Boundary

Sub-Parcel B9-1
Development Grading Plan
April 7, 2023

Figure 2

ARM Group LLC
Engineers and Scientists

0 50 100 200 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209

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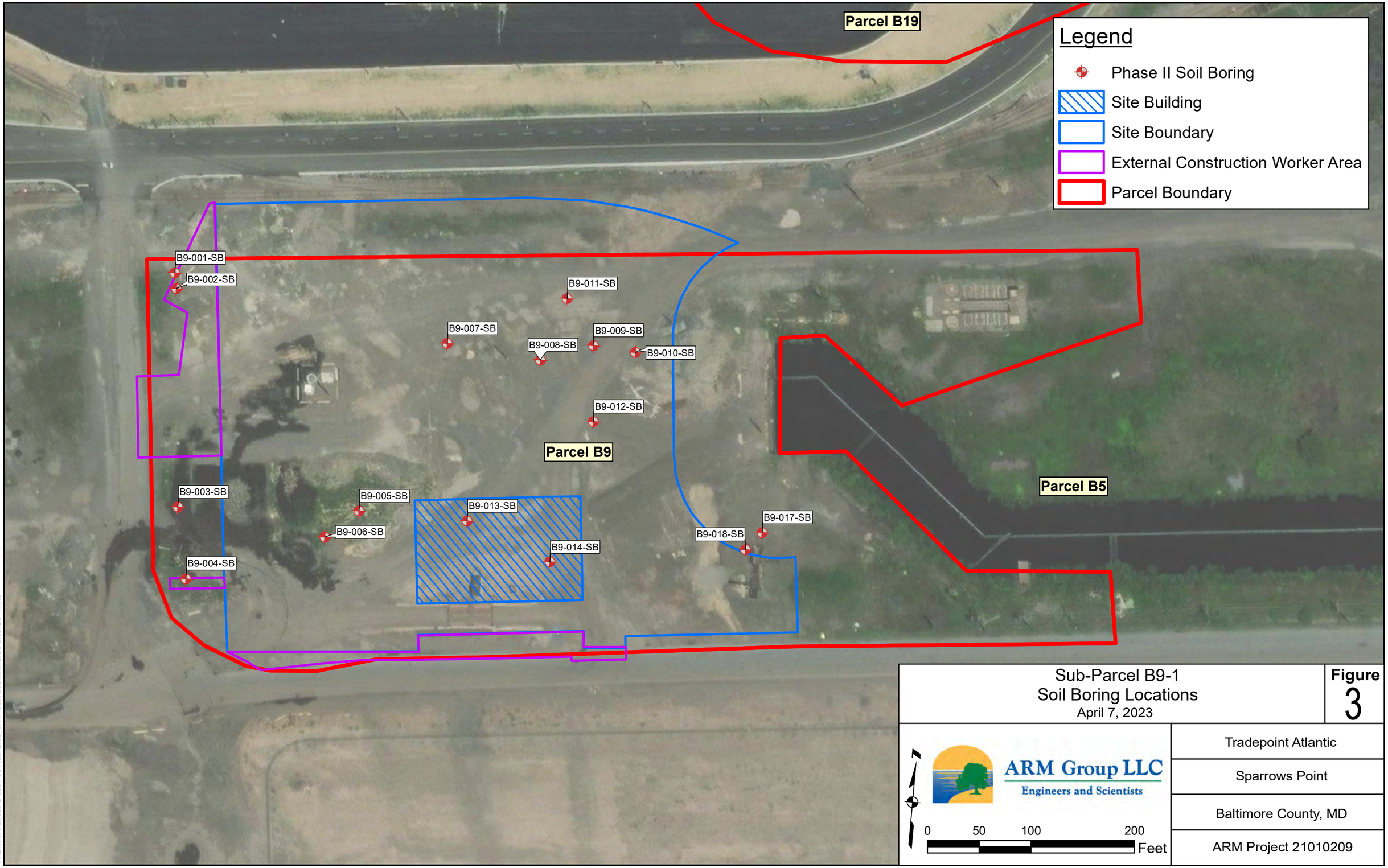

Sub-Parcel B9-1
Soil Boring Locations
April 7, 2023

Figure 3

ARM Group LLC
Engineers and Scientists

0 50 100 200 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209

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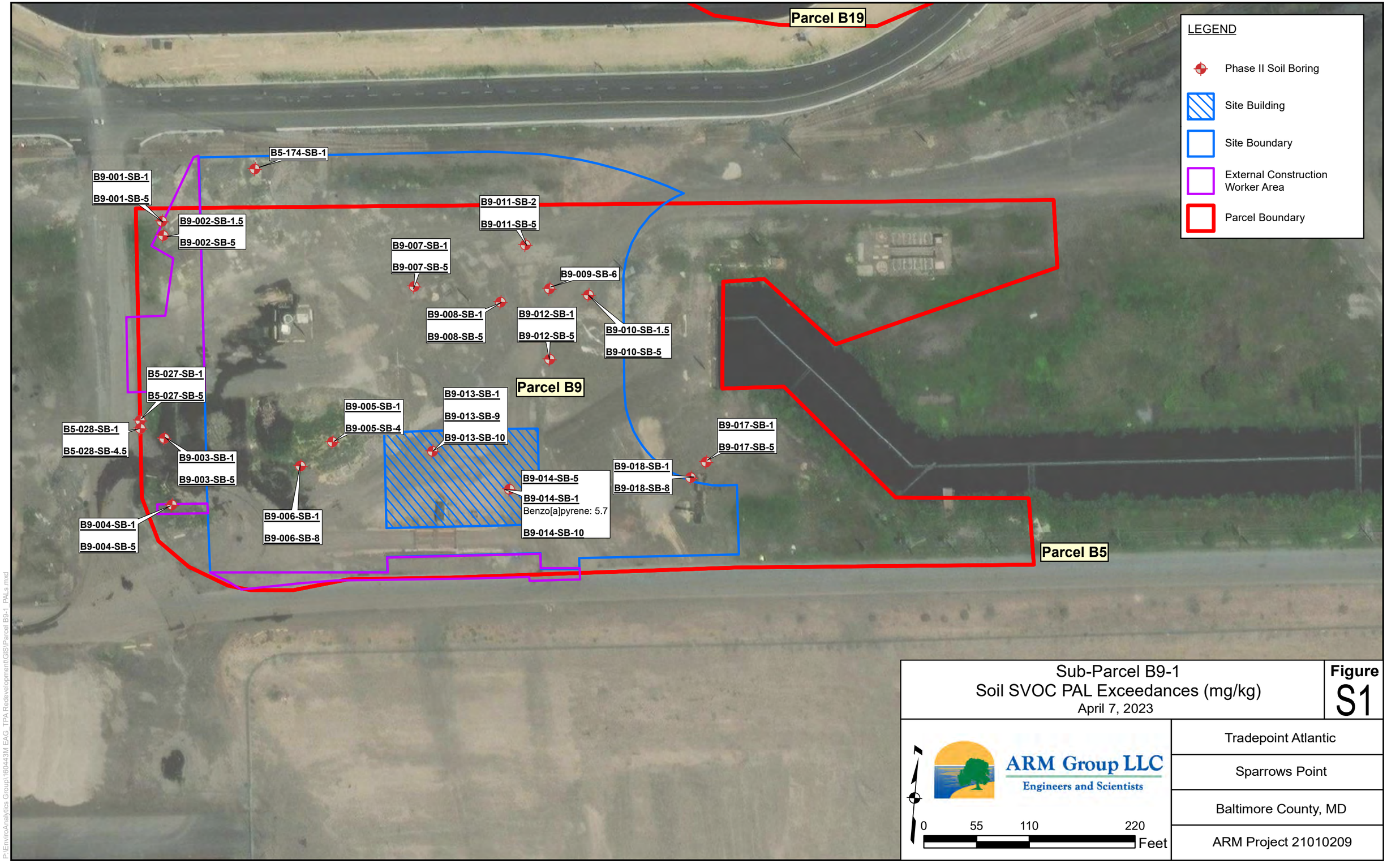

Sub-Parcel B9-1
Soil SVOC PAL Exceedances (mg/kg)
April 7, 2023

Figure S1

ARM Group LLC
Engineers and Scientists

0 55 110 220 Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010209

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Parcel B19

B5-174-SB-1
Aroclor 1260: 2.1
Total PCBs: 2.1 J

B9-001-SB-1
B9-002-SB-1.5
B9-011-SB-2
B9-007-SB-1
B9-009-SB-1
B9-008-SB-1
B9-012-SB-1
B9-010-SB-1.5
B5-027-SB-1
B5-028-SB-1
B9-003-SB-1
B9-005-SB-1
B9-013-SB-1
B9-017-SB-1
B9-006-SB-1
B9-018-SB-1
B9-014-SB-1
B9-004-SB-1

Parcel B9

Parcel B5

LEGEND

- Phase II Soil Boring
- Site Building
- Site Boundary
- External Construction Worker Area
- Parcel Boundary

Sub-Parcel B9-1
Soil PCB PAL Exceedances (mg/kg)
April 7, 2023

Figure
S2

ARM Group LLC
Engineers and Scientists

0 55 110 220
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010209

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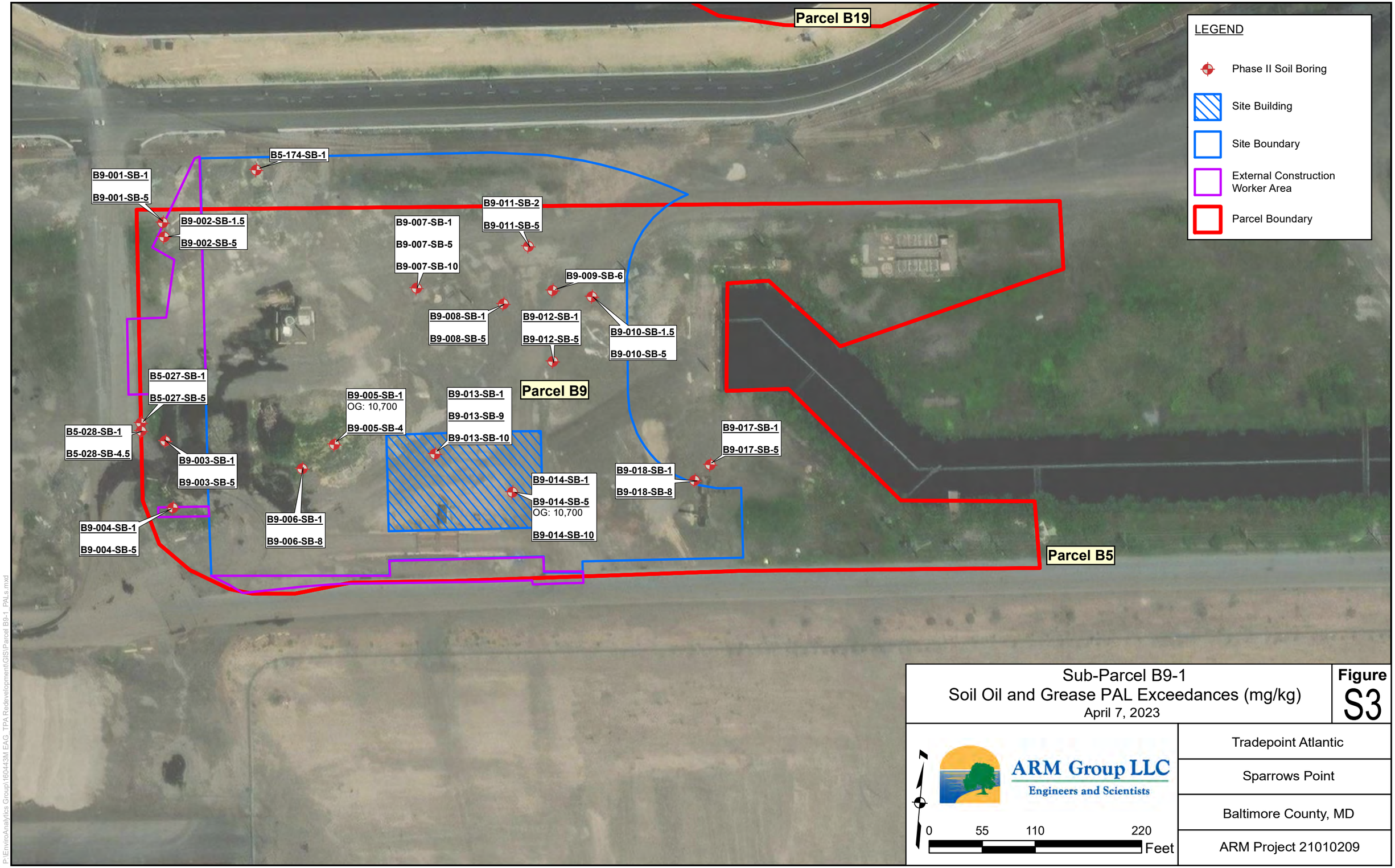

Sub-Parcel B9-1
Soil Oil and Grease PAL Exceedances (mg/kg)
April 7, 2023

Figure S3

ARM Group LLC
Engineers and Scientists

0 55 110 220 Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010209

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Parcel B19

LEGEND

- Phase II Soil Boring
- Site Building
- Site Boundary
- External Construction Worker Area
- Parcel Boundary

B5-174-SB-1
Arsenic: 13.2

B9-001-SB-1
Arsenic: 5.9

B9-001-SB-5
Arsenic: 47.5

B9-002-SB-1.5
Arsenic: 6.0

B9-002-SB-5
Arsenic: 4.0

B9-002-SB-10
Arsenic: 3.3

B9-003-SB-1
Arsenic: 8.5

B9-003-SB-5
Arsenic: 5.8
Thallium: 19.2 J

B9-004-SB-1
Arsenic: 10.4

B9-004-SB-5
Arsenic: 17.7
Lead: 1,790 J
Thallium: 12.3 J

B9-005-SB-1
Arsenic: 15.8
Thallium: 18.2 J

B9-005-SB-4
Arsenic: 3.0
Thallium: 23.1 J

B9-006-SB-1
Arsenic: 4.5

B9-006-SB-8
Arsenic: 16.0
Manganese: 29,100

B9-007-SB-1
Arsenic: 3.1

B9-007-SB-5
Arsenic: 4.5

B9-007-SB-10
Arsenic: 5.5

B9-008-SB-1
Arsenic: 3.0

B9-008-SB-5
Arsenic: 8.6

B9-009-SB-1
Arsenic: 4.3

B9-009-SB-6

B9-010-SB-1.5
Arsenic: 4.3

B9-010-SB-5
Arsenic: 4.3

B9-011-SB-2

B9-011-SB-5
Arsenic: 5.7

B9-012-SB-1

B9-012-SB-5

B9-013-SB-1
Arsenic: 12.6

B9-013-SB-9
Arsenic: 3.5

B9-013-SB-10
Arsenic: 4.9

B9-014-SB-1
Arsenic: 4.3

B9-014-SB-5
Arsenic: 56.0
Lead: 1,470

B9-014-SB-10
Arsenic: 10.4

B9-017-SB-1

B9-017-SB-5
Arsenic: 4.0

B9-017-SB-10
Arsenic: 10.1

B9-018-SB-1
Arsenic: 8.5

B9-018-SB-8
Arsenic: 10.8

B9-018-SB-10
Arsenic: 32.2

Parcel B9

Parcel B5

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Sub-Parcel B9-1
Soil Inorganic PAL Exceedances (mg/kg)
April 7, 2023

Figure S4

ARM Group LLC
Engineers and Scientists

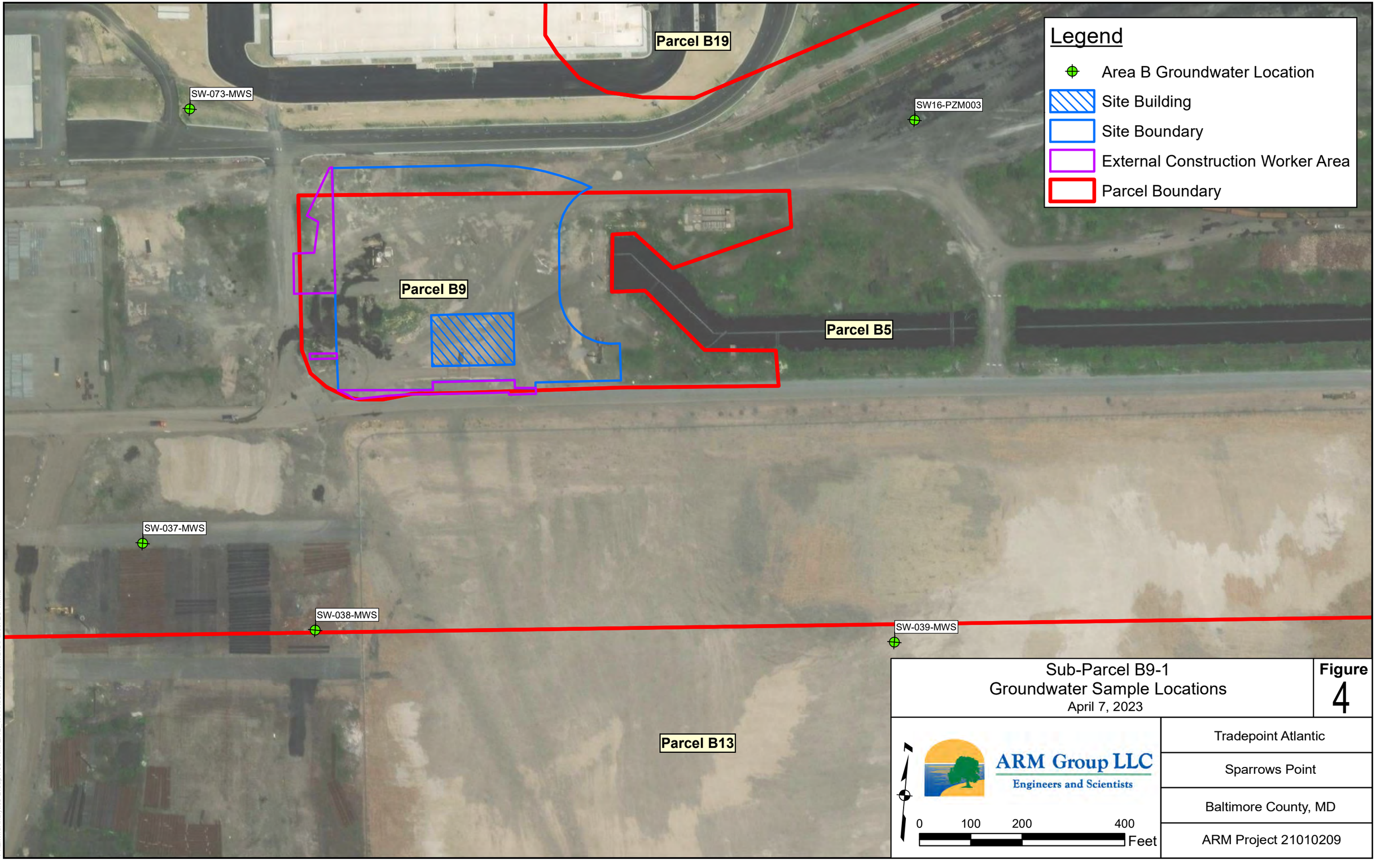
0 55 110 220 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209



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Sub-Parcel B9-1
Groundwater Sample Locations
April 7, 2023

Figure 4

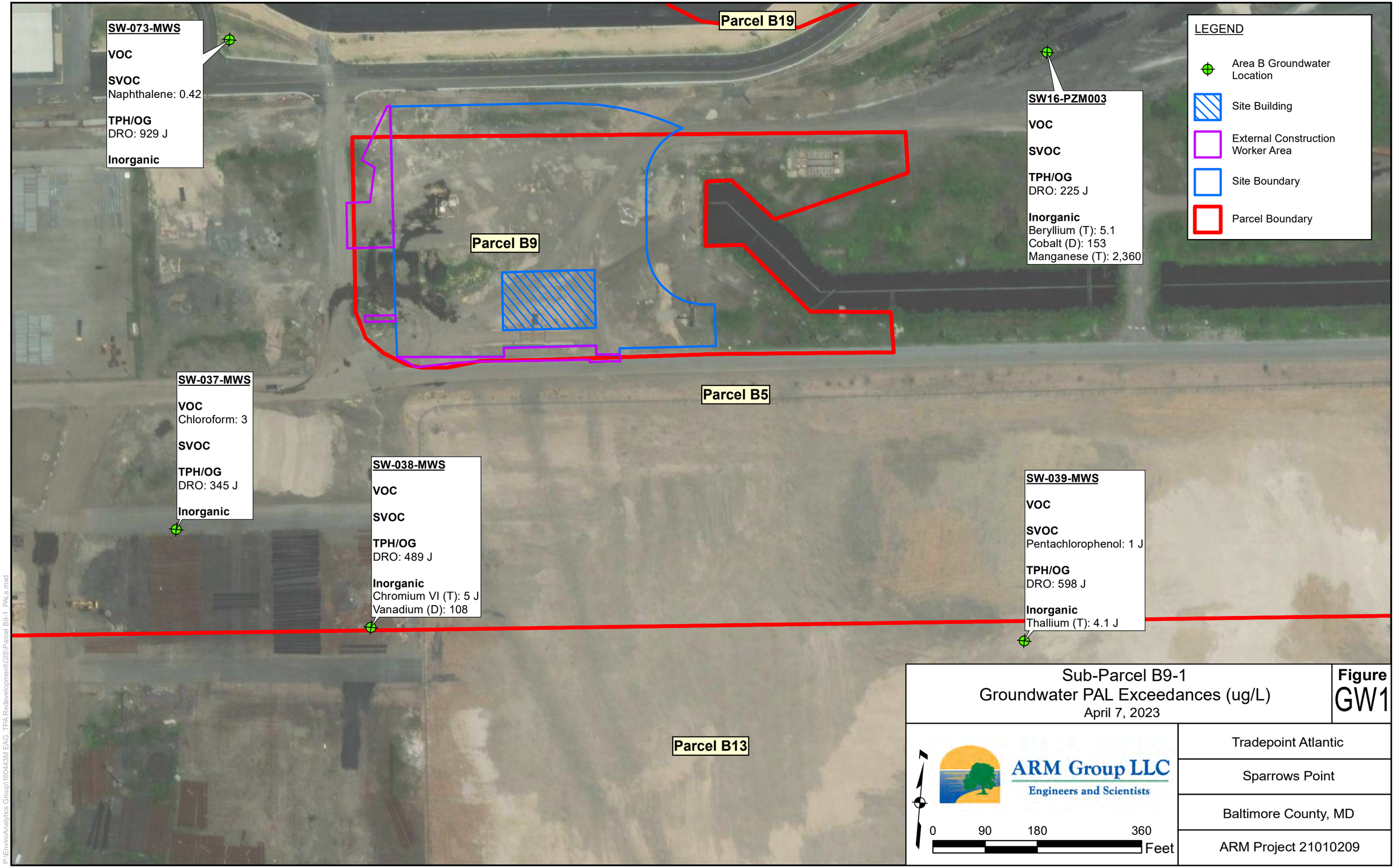
ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209



Sub-Parcel B9-1
Groundwater PAL Exceedances (ug/L)
April 7, 2023

Figure
GW1

ARM Group LLC
Engineers and Scientists

0 90 180 360 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209

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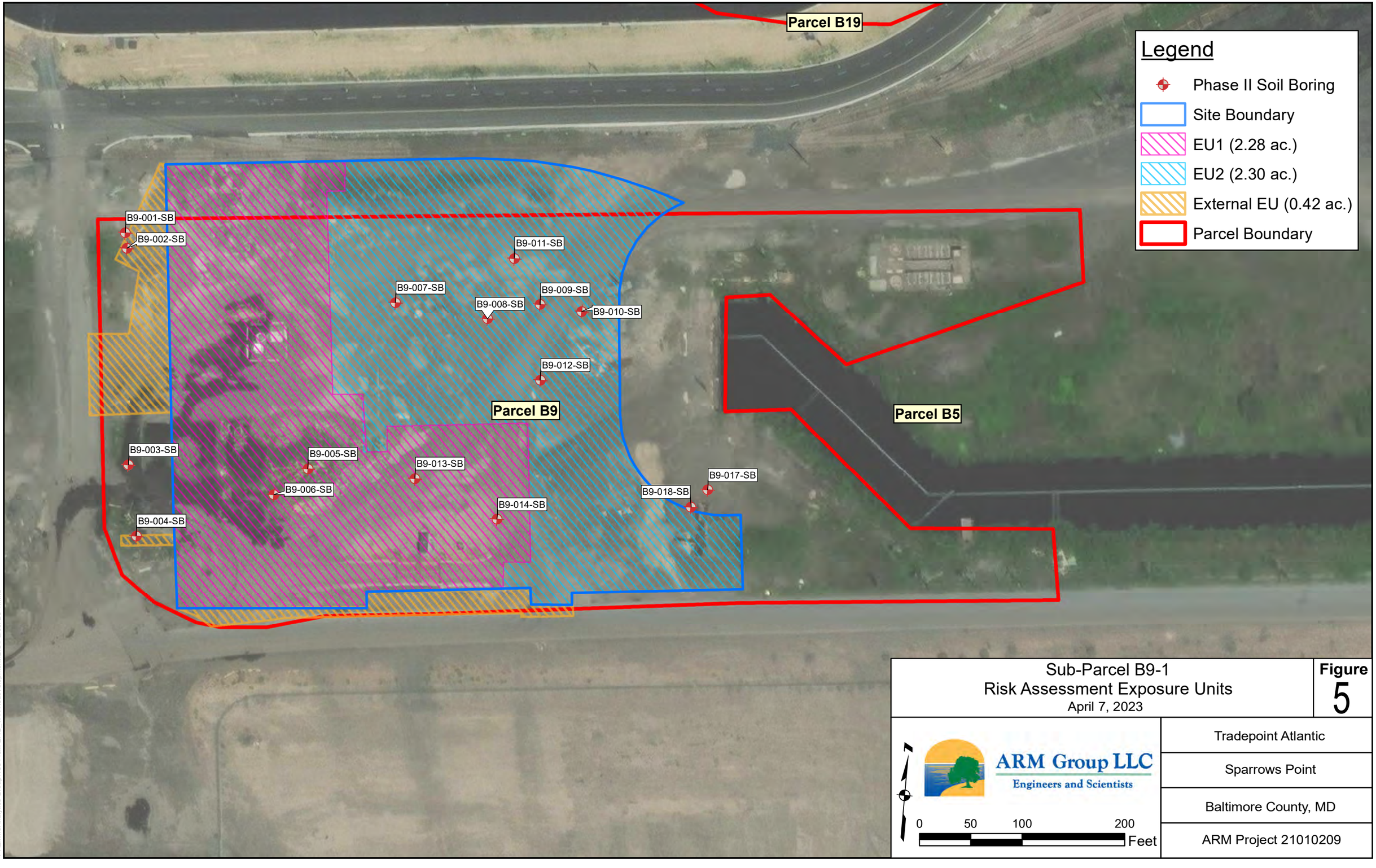

Sub-Parcel B9-1
Risk Assessment Exposure Units
April 7, 2023

Figure 5

ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010209

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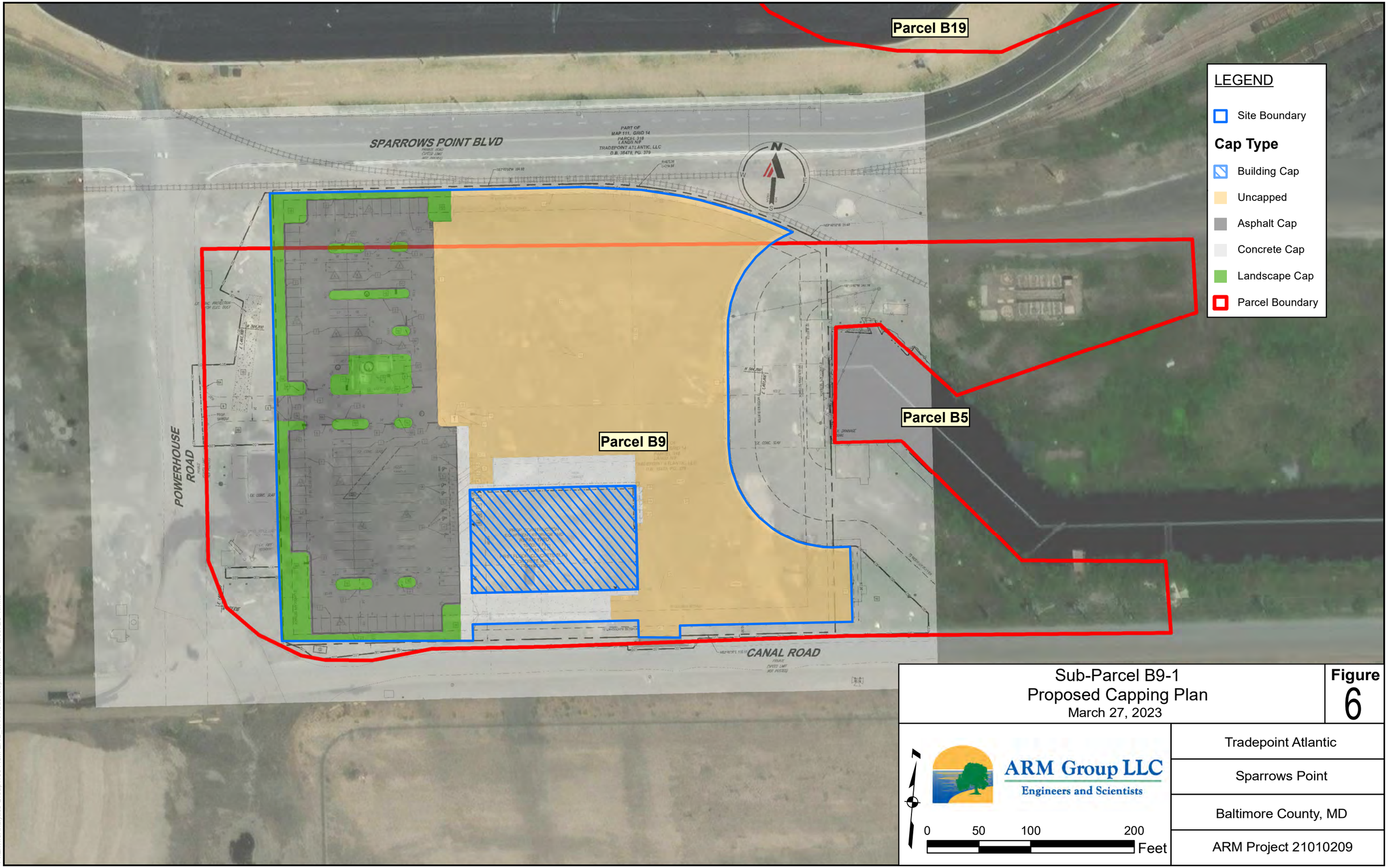

Sub-Parcel B9-1
Proposed Capping Plan
March 27, 2023

Figure
6

ARM Group LLC
Engineers and Scientists

0 50 100 200 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209

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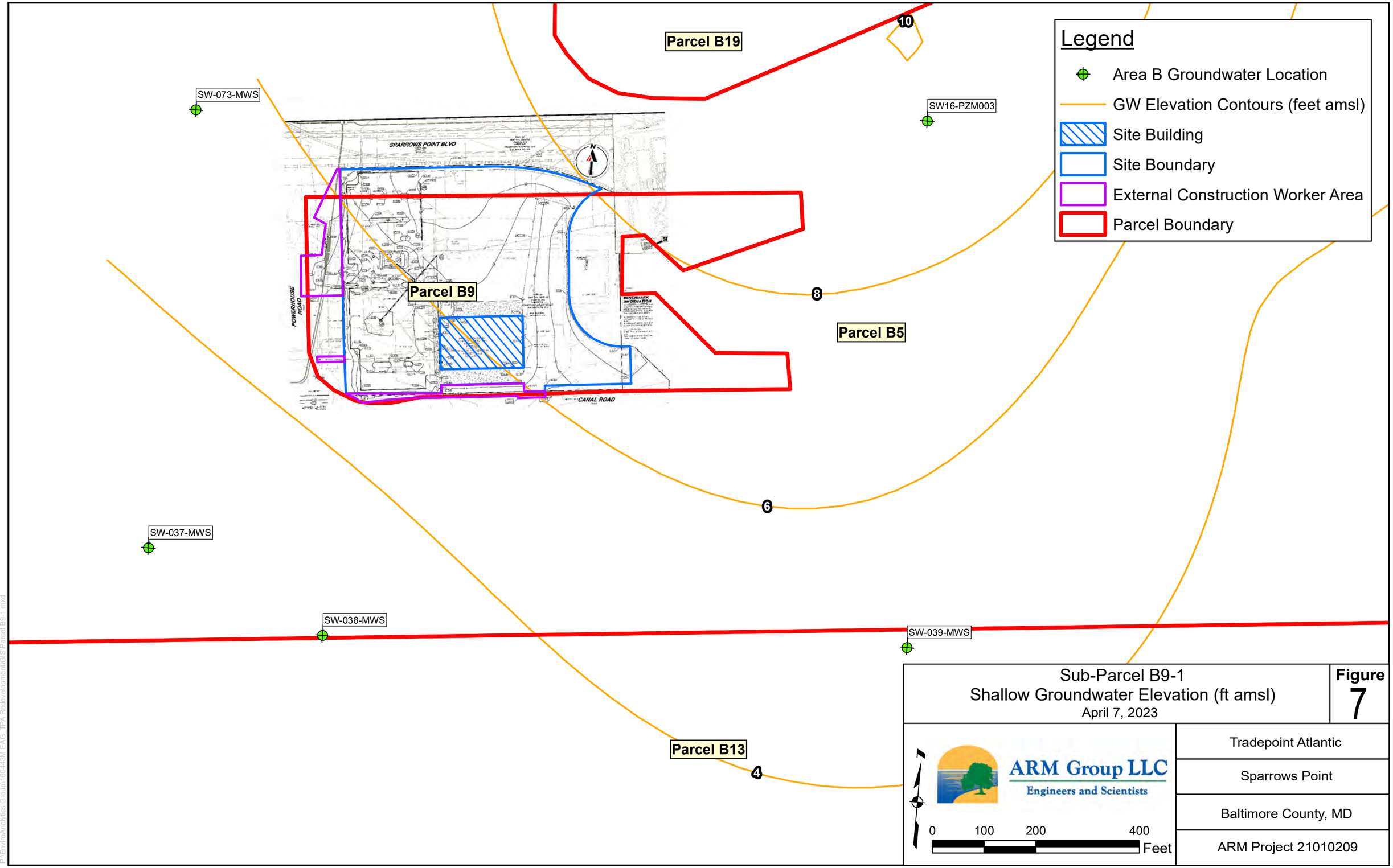

Sub-Parcel B9-1
Shallow Groundwater Elevation (ft amsl)
April 7, 2023

Figure 7

ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209

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TABLES

Table 1 - Sub-Parcel B9-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B5-027-SB-1	B5-027-SB-5	B5-028-SB-1	B5-028-SB-4.5	B5-174-SB-1*	B9-001-SB-1	B9-001-SB-5	B9-002-SB-1.5	B9-002-SB-5	B9-003-SB-1
			1/20/2016	1/20/2016	1/20/2016	1/20/2016	1/18/2016	5/29/2020	5/29/2020	5/29/2020	5/29/2020	5/29/2020
Volatile Organic Compounds												
1,4-Dioxane	mg/kg	24	*0.1 R*	*0.11 R*	*0.12 R*	*0.12 R*	*0.1 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
2-Butanone (MEK)	mg/kg	190,000	*0.01 U*	*0.011 U*	*0.012 U*	*0.012 U*	*0.01 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Acetone	mg/kg	670,000	*0.01 U*	*0.011 U*	*0.012 U*	**0.075**	*0.01 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Carbon disulfide	mg/kg	3,500	*0.0051 U*	*0.0053 U*	*0.0059 U*	*0.006 U*	*0.0051 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Chloroform	mg/kg	1	*0.0051 U*	**0.016**	*0.0059 U*	*0.006 U*	*0.0051 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Cyclohexane	mg/kg	27,000	*0.01 U*	*0.011 U*	*0.012 U*	0.0069 J	*0.01 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Tetrachloroethene	mg/kg	100	*0.0051 U*	**0.024**	*0.0059 U*	**0.033**	*0.0051 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Toluene	mg/kg	47,000	*0.0051 U*	*0.0053 U*	*0.0059 U*	*0.006 U*	*0.0051 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Semi-Volatile Organic Compounds^												
1,1-Biphenyl	mg/kg	200	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	0.69 U	0.078 U	0.75 U	0.081 U	*0.78 U*
2-Methylnaphthalene	mg/kg	3,000	**0.15**	**0.15**	0.0014 J	**0.089**	**0.11**	**0.78**	**0.038**	**0.25**	**0.019 J**	**0.22**
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	*7.5 U*	*7.7 U*	*7.2 U*	*7.4 U*	*14.5 U*	1.4 U	0.16 U	1.5 U	0.16 U	*1.6 U*
Acenaphthene	mg/kg	45,000	**0.0087**	**0.025**	*0.0073 U*	**0.0095**	**0.017**	**0.018 J**	**0.0026 J**	**0.0098 J**	0.026 U	0.069 J
Acenaphthylene	mg/kg	45,000	**0.011**	**0.14**	*0.0073 U*	**0.045**	**0.044**	**0.034 J**	**0.023**	**0.065**	**0.0058 J**	**0.34**
Acetophenone	mg/kg	120,000	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	0.69 U	0.078 U	0.75 U	0.081 U	*0.78 U*
Anthracene	mg/kg	230,000	**0.032**	**0.13**	0.0025 J	**0.065**	**0.086**	**0.041**	**0.028**	**0.046**	**0.0088 J**	**0.48**
Benz[a]anthracene	mg/kg	21	**0.058**	**0.39**	0.0045 J	**0.25**	**0.27**	**0.21**	**0.13**	**0.25**	**0.048**	**1.8**
Benzaldehyde	mg/kg	120,000	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	0.69 U	0.078 U	0.75 U	0.081 U	*0.78 U*
Benzo[a]pyrene	mg/kg	2	0.059 J	0.45 J	0.0023 J	0.22 J	**0.38**	**0.18**	**0.092**	**0.24**	**0.041**	**1.3**
Benzo[b]fluoranthene	mg/kg	21	0.19 J	1.3 J	**0.0083**	0.67 J	**0.85**	**0.28**	**0.14**	**0.34**	**0.058**	**2.2**
Benzo[g,h,i]perylene	mg/kg		0.036 J	0.23 J	0.0023 J	0.11 J	**0.18**	**0.14**	**0.053**	**0.2**	**0.032**	**0.82**
Benzo[k]fluoranthene	mg/kg	210	0.19 J	1.3 J	**0.008**	0.67 J	**0.84**	**0.089**	**0.038**	**0.082**	**0.015 J**	**0.56**
bis(2-Ethylhexyl)phthalate	mg/kg	160	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	0.69 U	0.078 U	0.17 B	0.081 U	*0.78 U*
Caprolactam	mg/kg	400,000	*9.4 U*	*9.7 U*	*9 U*	*9.3 U*	*18.2 U*	1.7 U	0.2 U	1.9 U	0.2 U	*1.9 U*
Carbazole	mg/kg		*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	0.69 U	0.078 U	0.75 U	0.081 U	*0.78 U*
Chrysene	mg/kg	2100	**0.11**	**0.52**	0.0043 J	**0.33**	**0.32**	**0.22**	**0.11**	**0.19**	**0.037**	**1.5**
Dibenz[a,h]anthracene	mg/kg	2	0.012 J	0.084 J	*0.0073 U*	0.048 J	**0.082**	**0.038**	**0.018**	**0.044**	**0.0075 J**	**0.23**
Di-n-butylphthalate	mg/kg	82,000	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	0.69 U	0.038 B	0.75 U	0.032 B	*0.78 U*
Di-n-ocytlphthalate	mg/kg	8200	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	0.69 U	0.078 U	0.75 U	0.081 U	*0.78 U*
Fluoranthene	mg/kg	30,000	**0.097**	**0.55**	0.0068 J	**0.44**	**0.39**	**0.29**	**0.14**	**0.2**	**0.062**	**3.7**
Fluorene	mg/kg	30,000	**0.013**	**0.024**	*0.0073 U*	**0.015**	**0.014**	**0.039**	0.0081 U	**0.016 J**	**0.0035 J**	0.074 J
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.028 J	0.21 J	0.0014 J	0.11 J	**0.2**	**0.15**	**0.065**	**0.19**	**0.029**	0.91 J
Naphthalene	mg/kg	9	**0.093**	**0.13**	0.0027 B	**0.08**	**0.089**	**0.63**	**0.05**	**0.25**	**0.019 J**	**0.4**
N-Nitrosodiphenylamine	mg/kg	470	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	0.69 U	0.078 U	0.75 U	0.081 U	*0.78 U*
Phenanthrene	mg/kg		**0.16**	**0.33**	0.0064 J	**0.29**	**0.34**	**0.4**	**0.11**	**0.22**	**0.04**	**1.7**
Phenol	mg/kg	250,000	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	0.69 U	0.078 U	0.75 U	0.081 U	*0.78 U*
Pyrene	mg/kg	23,000	**0.084**	**0.57**	0.0051 J	**0.35**	**0.36**	**0.27**	**0.12**	**0.2**	**0.053**	**3**
PCBs												
Aroclor 1232	mg/kg	1	*0.019 U*	*N/A*	*0.019 U*	*N/A*	*0.37 U*	0.085 U	N/A	0.094 U	N/A	*0.096 U*
Aroclor 1248	mg/kg	1	*0.019 U*	*N/A*	*0.019 U*	*N/A*	*0.37 U*	0.085 U	N/A	0.094 U	N/A	*0.096 U*
Aroclor 1254	mg/kg	0.97	*0.019 U*	*N/A*	*0.019 U*	*N/A*	*0.37 U*	**0.084 J**	N/A	**0.073 J**	N/A	*0.096 U*
Aroclor 1260	mg/kg	1	*0.019 U*	*N/A*	*0.019 U*	*N/A*	**2.1**	**0.045 J**	N/A	**0.056 J**	N/A	*0.096 U*
PCBs (total)	mg/kg	1	*0.13 U*	*N/A*	*0.13 U*	*N/A*	**2.1 J**	0.76 U	N/A	0.84 U	N/A	*0.87 U*
TPH/Oil & Grease												
Diesel Range Organics	mg/kg	6,200	**52.5**	**76.9**	**22.9**	**57.2**	**135**	**58.7 J**	**149 J**	**66.9 J**	**27.4 J**	98.6 J
Gasoline Range Organics	mg/kg	6,200	*9.9 U*	*20.3 U*	*11.9 U*	*17.3 U*	*10.3 U*	9.8 U	13.6 U	11.5 U	15.2 U	*11.3 U*
Oil & Grease	mg/kg	6,200	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	**765**	239 U	**781**	493 U	367 J

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
*indicates non-validated data
B9-009-SB-1 sample was excavated
N/A indicates that the parameter was not analyzed for this sample
^PAH compounds were analyzed via SIM
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 1 - Sub-Parcel B9-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B9-003-SB-5	B9-004-SB-1	B9-004-SB-5	B9-005-SB-1	B9-005-SB-4	B9-006-SB-1	B9-006-SB-8	B9-007-SB-1*	B9-007-SB-5*	B9-008-SB-1*
			5/29/2020	5/29/2020	5/29/2020	5/29/2020	5/29/2020	5/29/2020	5/29/2020	6/1/2020	6/1/2020	5/27/2020
Volatile Organic Compounds												
1,4-Dioxane	mg/kg	24	*N/A*	*N/A*	*N/A*	*N/A*	*0.12 R*	*0.1 R*	*0.13 R*	*N/A*	*N/A*	*N/A*
2-Butanone (MEK)	mg/kg	190,000	*N/A*	*N/A*	*N/A*	*N/A*	*0.012 U*	*0.01 UJ*	*0.013 U*	*N/A*	*N/A*	*N/A*
Acetone	mg/kg	670,000	*N/A*	*N/A*	*N/A*	*N/A*	*0.012 U*	0.0055 B	*0.013 U*	*N/A*	*N/A*	*N/A*
Carbon disulfide	mg/kg	3,500	*N/A*	*N/A*	*N/A*	*N/A*	0.002 J	*0.0051 UJ*	*0.0067 U*	*N/A*	*N/A*	*N/A*
Chloroform	mg/kg	1	*N/A*	*N/A*	*N/A*	*N/A*	*0.0059 U*	*0.0051 UJ*	*0.0067 U*	*N/A*	*N/A*	*N/A*
Cyclohexane	mg/kg	27,000	*N/A*	*N/A*	*N/A*	*N/A*	*0.012 U*	*0.01 UJ*	*0.013 U*	*N/A*	*N/A*	*N/A*
Tetrachloroethene	mg/kg	100	*N/A*	*N/A*	*N/A*	*N/A*	*0.0059 U*	*0.0051 UJ*	*0.0067 U*	*N/A*	*N/A*	*N/A*
Toluene	mg/kg	47,000	*N/A*	*N/A*	*N/A*	*N/A*	*0.0059 U*	*0.0051 UJ*	*0.0067 U*	*N/A*	*N/A*	*N/A*
Semi-Volatile Organic Compounds^												
1,1-Biphenyl	mg/kg	200	*0.078 U*	0.022 J	0.037 J	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*	*0.7 U*	*0.08 U*	**0.14**
2-Methylnaphthalene	mg/kg	3,000	**0.071**	**0.21**	**0.089**	**0.2**	**0.034**	**0.13**	**0.018**	**0.062**	*0.026 U*	**0.31**
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.021 J	*0.15 U*	*0.15 U*	*1.5 U*	*0.14 U*	*0.14 R*	*0.15 U*	*1.4 U*	*0.16 U*	*0.14 U*
Acenaphthene	mg/kg	45,000	0.0065 J	**0.012**	0.0039 J	0.028 J	0.0047 J	0.02 J	0.0032 J	0.012 J	*0.026 U*	**0.044**
Acenaphthylene	mg/kg	45,000	**0.12**	**0.079**	**0.064**	**0.46**	**0.013**	**0.056**	0.0029 J	**0.04**	*0.026 U*	**0.2**
Acetophenone	mg/kg	120,000	*0.078 U*	0.061 J	0.042 J	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*	*0.7 U*	*0.08 U*	0.02 J
Anthracene	mg/kg	230,000	**0.097**	**0.065**	**0.038**	**0.34**	**0.014**	**0.067**	0.0063 J	**0.054**	*0.026 U*	**0.28**
Benz[a]anthracene	mg/kg	21	**0.67**	**0.35**	**0.23**	**1.3**	**0.099**	**0.43**	**0.033**	**0.33**	0.0032 J	**0.88**
Benzaldehyde	mg/kg	120,000	*0.078 U*	0.099 J	0.06 J	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*	*0.7 U*	*0.08 U*	0.019 J
Benzo[a]pyrene	mg/kg	2	**0.55**	**0.33**	**0.2**	**1.4**	**0.12**	**0.36**	**0.03**	**0.37**	*0.026 U*	**0.87**
Benzo[b]fluoranthene	mg/kg	21	**0.74**	**0.5**	**0.31**	**2.3**	**0.16**	**0.58**	**0.038**	**0.49**	*0.026 U*	**1.2**
Benzo[g,h,i]perylene	mg/kg		**0.37**	**0.24**	**0.12**	**1.1**	**0.084**	**0.28**	**0.021**	**0.3**	*0.026 U*	**0.51**
Benzo[k]fluoranthene	mg/kg	210	**0.24**	**0.12**	**0.088**	**0.63**	**0.04**	**0.2**	**0.012**	**0.13**	*0.026 U*	**0.37**
bis(2-Ethylhexyl)phthalate	mg/kg	160	*0.078 U*	*0.073 U*	*0.076 U*	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*	0.23 J	*0.08 U*	0.017 J
Caprolactam	mg/kg	400,000	*0.19 U*	0.13 J	0.13 J	*1.8 U*	*0.18 U*	*0.18 U*	0.023 J	*1.8 U*	*0.2 U*	*0.18 U*
Carbazole	mg/kg		0.033 J	0.021 J	0.028 J	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*	*0.7 U*	*0.08 U*	**0.11**
Chrysene	mg/kg	2100	**0.47**	**0.34**	**0.18**	**1.2**	**0.086**	**0.54**	**0.034**	**0.27**	*0.026 U*	**0.88**
Dibenz[a,h]anthracene	mg/kg	2	**0.11**	**0.072**	**0.045**	**0.28**	**0.02**	**0.077**	0.0064 J	**0.064**	*0.026 U*	**0.14**
Di-n-butylphthalate	mg/kg	82,000	0.035 B	0.031 B	0.028 B	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*	0.28 J	0.027 JB	0.043 J
Di-n-ocytlphthalate	mg/kg	8200	*0.078 U*	*0.073 U*	*0.076 U*	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*	*0.7 U*	*0.08 U*	*0.072 U*
Fluoranthene	mg/kg	30,000	**0.74**	**0.37**	**0.15**	**1.2**	**0.11**	**0.77**	**0.045**	**0.43**	0.0021 J	**1.9**
Fluorene	mg/kg	30,000	**0.015**	**0.012**	*0.0085 U*	**0.037**	0.0039 J	0.017 J	0.0029 J	0.0088 J	*0.026 U*	**0.038**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.43**	**0.25**	**0.15**	**1.1**	**0.091**	**0.29**	**0.021**	**0.28**	*0.026 U*	**0.6**
Naphthalene	mg/kg	9	**0.14**	**0.36**	**0.08**	**0.31**	**0.048**	**0.29**	**0.013**	**0.24**	*0.026 U*	**1.6**
N-Nitrosodiphenylamine	mg/kg	470	*0.078 U*	0.018 J	*0.076 U*	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*	*0.7 U*	*0.08 U*	*0.072 U*
Phenanthrene	mg/kg		**0.33**	**0.34**	**0.12**	**0.44**	**0.057**	**0.5**	**0.044**	**0.24**	*0.026 U*	**1.5**
Phenol	mg/kg	250,000	0.021 J	0.019 J	*0.076 U*	*0.73 U*	*0.071 U*	*0.072 R*	*0.074 U*	*0.7 U*	*0.08 U*	*0.072 U*
Pyrene	mg/kg	23,000	**0.6**	**0.33**	**0.14**	**1.4**	**0.1**	**0.68**	**0.038**	**0.4**	0.0018 J	**1.6**
PCBs												
Aroclor 1232	mg/kg	1	*N/A*	*0.091 U*	*N/A*	*0.092 U*	*N/A*	*0.091 U*	*N/A*	*0.18 U*	*0.1 U*	**0.098**
Aroclor 1248	mg/kg	1	*N/A*	*0.091 U*	*N/A*	*0.092 U*	*N/A*	*0.091 U*	*N/A*	*0.18 U*	*0.1 U*	0.048 J
Aroclor 1254	mg/kg	0.97	*N/A*	*0.091 U*	*N/A*	**0.2**	*N/A*	*0.091 U*	*N/A*	**0.55**	*0.1 U*	*0.091 U*
Aroclor 1260	mg/kg	1	*N/A*	*0.091 U*	*N/A*	0.18 JN	*N/A*	*0.023 U*	*N/A*	*0.18 U*	*0.1 U*	*0.091 U*
PCBs (total)	mg/kg	1	*N/A*	*0.82 U*	*N/A*	0.37 J	*N/A*	*0.82 U*	*N/A*	0.55 J	*0.91 U*	*0.82 U*
TPH/Oil & Grease												
Diesel Range Organics	mg/kg	6,200	65.8 J	87.2 J	84.1 J	338 J	31.1 J	73.5 J	30.1 J	**169**	**56.4**	**155**
Gasoline Range Organics	mg/kg	6,200	*11.8 UJ*	*14.1 U*	8.5 J	*15.9 U*	*17.1 U*	*11.7 U*	*16.3 U*	*10 U*	*10.5 U*	*9.1 U*
Oil & Grease	mg/kg	6,200	*469 U*	190 J	**275**	**10,700**	147 J	**1,700**	*222 U*	**2,280**	*484 U*	**283**

Table 1 - Sub-Parcel B9-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B9-008-SB-5* 5/27/2020	B9-009-SB-1* 10/12/2020	B9-009-SB-6* 10/12/2020	B9-010-SB-1.5 5/26/2020	B9-010-SB-5 5/26/2020	B9-011-SB-2 5/26/2020	B9-011-SB-5 5/26/2020	B9-012-SB-1 5/26/2020	B9-012-SB-5 5/26/2020	B9-013-SB-1* 5/27/2020
Volatile Organic Compounds												
1,4-Dioxane	mg/kg	24	*N/A*	*N/A*	*0.11 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
2-Butanone (MEK)	mg/kg	190,000	*N/A*	*N/A*	*0.011 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Acetone	mg/kg	670,000	*N/A*	*N/A*	0.0075 J	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Carbon disulfide	mg/kg	3,500	*N/A*	*N/A*	0.0016 J	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Chloroform	mg/kg	1	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Cyclohexane	mg/kg	27,000	*N/A*	*N/A*	*0.011 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Tetrachloroethene	mg/kg	100	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Toluene	mg/kg	47,000	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Semi-Volatile Organic Compounds^												
1,1-Biphenyl	mg/kg	200	**0.14**	*18.5 U*	*0.71 U*	**0.19**	**0.14**	*0.074 U*	*0.077 U*	**0.14**	**0.17**	*0.76 U*
2-Methylnaphthalene	mg/kg	3,000	**0.29**	*0.3 U*	0.02 J	**0.14**	**0.21**	**0.0072**	0.0036 J	**0.17**	**0.18**	**0.24**
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	*0.14 U*	*37 U*	*1.4 U*	*0.15 R*	*0.14 R*	*0.15 U*	*0.15 U*	*0.14 R*	*0.14 R*	*1.5 U*
Acenaphthene	mg/kg	45,000	**0.045**	*0.3 U*	*0.037 U*	**0.038**	**0.059**	0.0024 J	*0.0084 UJ*	**0.042**	**0.058**	**0.06**
Acenaphthylene	mg/kg	45,000	**0.14**	*0.3 U*	0.014 J	**0.091**	**0.13**	0.0025 J	0.0018 J	**0.11**	**0.14**	**0.28**
Acetophenone	mg/kg	120,000	0.022 J	*18.5 U*	*0.71 U*	0.036 J	0.022 J	*0.074 U*	*0.077 U*	0.028 J	0.029 J	*0.76 U*
Anthracene	mg/kg	230,000	**0.22**	*0.3 U*	0.012 J	**0.19**	**0.32**	0.0071 J	0.002 J	**0.16**	**0.2**	**0.48**
Benz[a]anthracene	mg/kg	21	**0.65**	*0.3 U*	**0.05**	**0.68**	**1.5**	**0.044**	**0.012**	**0.68**	**1**	**1.3**
Benzaldehyde	mg/kg	120,000	0.02 J	*18.5 U*	*0.71 U*	0.034 J	0.021 J	*0.074 R*	*0.077 R*	0.034 J	0.027 J	*0.76 U*
Benzo[a]pyrene	mg/kg	2	**0.64**	0.21 J	**0.055**	**0.56**	**1.5**	**0.036**	0.0082 J	**0.56**	**0.68**	**1.3**
Benzo[b]fluoranthene	mg/kg	21	**1.2**	*0.3 U*	**0.066**	**0.99**	**2**	**0.063**	0.012 J	**1.1**	**1.1**	**1.7**
Benzo[g,h,i]perylene	mg/kg		**0.41**	**0.34**	**0.045**	**0.27**	**0.59**	**0.034**	0.0041 B	**0.3**	**0.35**	**0.9**
Benzo[k]fluoranthene	mg/kg	210	**0.27**	*0.3 U*	0.029 J	**0.25**	**0.45**	**0.02**	0.0035 J	**0.26**	**0.28**	**0.44**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.022 J	*18.5 U*	*0.71 U*	0.05 B	0.024 B	*0.074 U*	0.019 B	0.044 B	0.052 B	*0.76 U*
Caprolactam	mg/kg	400,000	0.022 J	*46.5 U*	*1.8 U*	0.039 J	0.027 J	*0.19 U*	0.031 J	0.032 J	0.031 J	*1.9 U*
Carbazole	mg/kg		**0.11**	*18.5 U*	*0.71 U*	**0.18**	**0.11**	*0.074 U*	*0.077 U*	**0.097**	**0.14**	0.19 J
Chrysene	mg/kg	2100	**0.66**	*0.3 U*	**0.059**	**0.49**	**1.2**	**0.04**	0.009 J	**0.56**	**0.63**	**1.2**
Dibenz[a,h]anthracene	mg/kg	2	**0.11**	0.076 J	0.0095 J	**0.075**	**0.15**	0.0056 J	0.0012 J	**0.08**	**0.091**	**0.17**
Di-n-butylphthalate	mg/kg	82,000	0.057 J	*18.5 U*	*0.71 U*	0.15 B	0.11 B	0.068 B	0.13 B	0.26 J	0.28 J	*0.76 U*
Di-n-ocytlphthalate	mg/kg	8200	*0.072 U*	*18.5 U*	*0.71 U*	*0.073 UJ*	*0.072 U*	*0.074 U*	*0.077 U*	*0.072 U*	*0.072 U*	*0.76 U*
Fluoranthene	mg/kg	30,000	**2**	0.027 J	**0.1**	**1.1**	**2**	**0.057**	0.012 J	**1.3**	**1.5**	**3.2**
Fluorene	mg/kg	30,000	**0.035**	*0.3 U*	*0.037 U*	**0.022**	**0.041**	0.0019 J	0.0011 J	**0.021**	**0.029**	**0.17**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.48**	0.23 J	**0.054**	**0.32**	**0.68**	**0.03**	0.0044 J	**0.34**	**0.41**	**0.99**
Naphthalene	mg/kg	9	**2**	*0.3 U*	**0.11**	**0.65**	**1.4**	0.0055 J	0.0059 J	**0.68**	**1.9**	**0.56**
N-Nitrosodiphenylamine	mg/kg	470	*0.072 U*	*18.5 U*	*0.71 U*	*0.073 U*	*0.072 U*	*0.074 U*	*0.077 U*	*0.072 U*	*0.072 U*	*0.76 U*
Phenanthrene	mg/kg		**1.5**	*0.3 U*	**0.058**	**0.63**	**1.2**	**0.034**	0.0082 J	**1.1**	**1.2**	**2.7**
Phenol	mg/kg	250,000	*0.072 U*	*18.5 U*	*0.71 U*	*0.073 R*	*0.072 R*	*0.074 U*	*0.077 U*	*0.072 R*	*0.072 R*	*0.76 U*
Pyrene	mg/kg	23,000	**1.6**	**0.41**	**0.12**	**1**	**1.8**	**0.051**	**0.011**	**1.1**	**1.3**	**2.6**
PCBs												
Aroclor 1232	mg/kg	1	0.059 J	*0.93 U*	*0.18 U*	0.12 J	**0.1**	*0.019 U*	*0.097 U*	**0.1**	*N/A*	*0.19 U*
Aroclor 1248	mg/kg	1	*0.093 U*	*0.93 U*	*0.18 U*	*0.18 U*	*0.067 U*	*0.019 U*	*0.097 U*	*0.054 U*	*N/A*	*0.19 U*
Aroclor 1254	mg/kg	0.97	*0.093 U*	0.22 J	0.06 J	*0.18 U*	*0.091 U*	*0.019 U*	*0.097 U*	*0.09 U*	*N/A*	*0.19 U*
Aroclor 1260	mg/kg	1	*0.093 U*	0.27 J	*0.18 U*	*0.18 U*	*0.091 U*	*0.019 U*	*0.097 U*	*0.09 U*	*N/A*	*0.19 U*
PCBs (total)	mg/kg	1	*0.83 U*	0.49 J	0.06 J	*1.6 U*	*0.82 U*	*0.17 U*	*0.87 U*	*0.81 U*	*N/A*	*1.7 U*
TPH/Oil & Grease												
Diesel Range Organics	mg/kg	6,200	**266**	**2,790**	**191**	**115**	**183**	**85.1**	**48.3**	**137**	**136**	**560**
Gasoline Range Organics	mg/kg	6,200	*9.8 U*	*11.1 U*	*10.9 U*	*10.2 U*	*10.9 U*	*10.6 U*	*12 U*	*9.3 U*	*11.1 U*	*9.9 U*
Oil & Grease	mg/kg	6,200	**227**	**34,900**	**778**	258 J-	260 J-	130 J-	392 J-	835 J-	303 J-	**1,110**

Table 1 - Sub-Parcel B9-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B9-013-SB-9* 10/8/2020	B9-013-SB-10* 10/8/2020	B9-014-SB-1* 5/27/2020	B9-014-SB-5* 5/27/2020	B9-014-SB-10* 10/8/2020	B9-017-SB-1* 5/27/2020	B9-017-SB-5* 5/27/2020	B9-018-SB-1* 5/27/2020	B9-018-SB-8* 5/27/2020
Volatile Organic Compounds											
1,4-Dioxane	mg/kg	24	*0.11 U*	**0.1**	*N/A*	*N/A*	*0.11 U*	*N/A*	*N/A*	*N/A*	*0.17 U*
2-Butanone (MEK)	mg/kg	190,000	0.0051 J	0.0048 J	*N/A*	*N/A*	*0.011 U*	*N/A*	*N/A*	*N/A*	*0.017 U*
Acetone	mg/kg	670,000	**0.017**	**0.011**	*N/A*	*N/A*	*0.011 U*	*N/A*	*N/A*	*N/A*	0.0063 J
Carbon disulfide	mg/kg	3,500	0.005 J	0.0029 J	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*0.0085 U*
Chloroform	mg/kg	1	*0.0055 U*	*0.0051 U*	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*0.0085 U*
Cyclohexane	mg/kg	27,000	*0.011 U*	0.0021 J	*N/A*	*N/A*	*0.011 U*	*N/A*	*N/A*	*N/A*	0.004 J
Tetrachloroethene	mg/kg	100	*0.0055 U*	*0.0051 U*	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*0.0085 U*
Toluene	mg/kg	47,000	*0.0055 U*	0.0011 J	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*0.0085 U*
Semi-Volatile Organic Compounds^											
1,1-Biphenyl	mg/kg	200	*0.078 U*	*0.072 U*	*0.74 U*	*0.81 U*	*0.088 U*	**0.14**	*0.072 U*	**0.097**	*0.77 U*
2-Methylnaphthalene	mg/kg	3,000	**0.01**	**0.011**	**0.092**	**0.13**	*0.0087 U*	**0.19**	*0.0072 U*	**0.25**	**0.083**
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	*0.16 U*	*0.14 U*	*1.5 U*	*1.6 U*	*0.18 U*	*0.15 U*	*0.14 U*	*0.15 U*	*1.5 U*
Acenaphthene	mg/kg	45,000	0.0022 J	0.0062 J	**0.03**	**0.084**	*0.0087 U*	**0.029**	*0.0072 U*	**0.023**	*0.0078 U*
Acenaphthylene	mg/kg	45,000	0.0066 J	**0.0088**	**0.073**	**1.7**	0.0038 J	**0.11**	0.0012 J	**0.062**	0.0073 J
Acetophenone	mg/kg	120,000	*0.078 U*	*0.072 U*	*0.74 U*	*0.81 U*	*0.088 U*	*0.075 U*	*0.072 U*	0.019 J	*0.77 U*
Anthracene	mg/kg	230,000	**0.018**	**0.095**	**0.18**	**0.92**	0.00078 J	**0.15**	*0.0072 U*	**0.1**	0.0045 J
Benz[a]anthracene	mg/kg	21	**0.049**	**0.31**	**0.8**	**7.7**	*0.0087 U*	**0.49**	0.0021 J	**0.36**	**0.044**
Benzaldehyde	mg/kg	120,000	*0.078 U*	*0.072 U*	*0.74 U*	*0.81 U*	*0.088 U*	*0.075 U*	*0.072 U*	0.024 J	*0.77 U*
Benzo[a]pyrene	mg/kg	2	**0.053**	**0.32**	**0.64**	**5.7**	*0.0087 U*	**0.49**	0.0046 J	**0.37**	**0.071**
Benzo[b]fluoranthene	mg/kg	21	**0.067**	**0.32**	**1.3**	**10**	*0.0087 U*	**0.65**	**0.012**	**0.63**	**0.078**
Benzo[g,h,i]perylene	mg/kg		**0.042**	**0.15**	**0.45**	**5.5**	*0.0087 U*	**0.38**	0.0064 J	**0.31**	**0.053**
Benzo[k]fluoranthene	mg/kg	210	**0.031**	**0.14**	**0.34**	**3.2**	*0.0087 U*	**0.2**	0.0041 J	**0.21**	**0.025**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.031 J	0.036 J	0.52 J	0.69 J	0.042 J	0.027 J	*0.072 U*	0.021 J	*0.77 U*
Caprolactam	mg/kg	400,000	*0.19 U*	*0.18 U*	*1.8 U*	*2 U*	*0.22 U*	*0.19 U*	*0.18 U*	*0.18 U*	*1.9 U*
Carbazole	mg/kg		*0.078 U*	**0.081**	0.25 J	0.57 J	*0.088 U*	0.064 J	*0.072 U*	**0.081**	*0.77 U*
Chrysene	mg/kg	2100	**0.051**	**0.24**	**0.88**	**6.5**	*0.0087 U*	**0.46**	**0.025**	**0.4**	**0.041**
Dibenz[a,h]anthracene	mg/kg	2	**0.0089**	**0.047**	**0.13**	**1.3**	*0.0087 U*	**0.098**	0.0018 J	**0.09**	**0.014**
Di-n-butylphthalate	mg/kg	82,000	0.044 J	0.045 J	*0.74 U*	*0.81 U*	0.057 J	0.065 J	0.034 J	0.05 J	*0.77 U*
Di-n-ocytlphthalate	mg/kg	8200	*0.078 U*	*0.072 U*	*0.74 U*	*0.81 U*	*0.088 U*	*0.075 U*	*0.072 U*	*0.073 U*	0.22 J
Fluoranthene	mg/kg	30,000	**0.11**	**0.42**	**1.7**	**12**	*0.0087 U*	**1.1**	**0.015**	**0.87**	**0.03**
Fluorene	mg/kg	30,000	0.0027 J	**0.02**	**0.024**	**0.11**	*0.0087 U*	**0.024**	*0.0072 U*	**0.02**	*0.0078 U*
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.051**	**0.21**	**0.57**	**5.8**	*0.0087 U*	**0.45**	**0.0074**	**0.37**	**0.062**
Naphthalene	mg/kg	9	**0.046**	**0.05**	**0.2**	**0.45**	*0.0087 U*	**0.85**	*0.0072 U*	**0.46**	**0.054**
N-Nitrosodiphenylamine	mg/kg	470	*0.078 U*	*0.072 U*	*0.74 U*	*0.81 U*	*0.088 U*	*0.075 U*	*0.072 U*	*0.073 U*	*0.77 U*
Phenanthrene	mg/kg		**0.062**	**0.25**	**1**	**5.9**	*0.0087 U*	**0.82**	0.002 J	**0.57**	**0.057**
Phenol	mg/kg	250,000	*0.078 U*	0.025 J	*0.74 U*	*0.81 U*	*0.088 U*	*0.075 U*	*0.072 U*	*0.073 U*	*0.77 U*
Pyrene	mg/kg	23,000	**0.094**	**0.36**	**1.3**	**9**	0.0007 J	**0.95**	0.0052 J	**0.67**	**0.027**
PCBs											
Aroclor 1232	mg/kg	1	*N/A*	*N/A*	*0.18 U*	*N/A*	*N/A*	0.062 J	*N/A*	0.092 J	*N/A*
Aroclor 1248	mg/kg	1	*N/A*	*N/A*	*0.18 U*	*N/A*	*N/A*	*0.093 U*	*N/A*	0.049 J	*N/A*
Aroclor 1254	mg/kg	0.97	*N/A*	*N/A*	*0.18 U*	*N/A*	*N/A*	*0.093 U*	*N/A*	*0.092 U*	*N/A*
Aroclor 1260	mg/kg	1	*N/A*	*N/A*	*0.18 U*	*N/A*	*N/A*	*0.093 U*	*N/A*	*0.092 U*	*N/A*
PCBs (total)	mg/kg	1	*N/A*	*N/A*	*1.6 U*	*N/A*	*N/A*	*0.84 U*	*N/A*	*0.83 U*	*N/A*
TPH/Oil & Grease											
Diesel Range Organics	mg/kg	6,200	**22.6**	**27.5**	**2,410**	**3,210**	**16.9**	**99.4**	**13.7**	**191**	**32.4**
Gasoline Range Organics	mg/kg	6,200	*11.8 U*	*18.2 U*	*12.1 U*	*11.7 U*	*11.6 U*	*9 U*	*14.2 U*	*9.7 U*	*14.2 U*
Oil & Grease	mg/kg	6,200	*233 U*	*440 U*	**3,420**	**10,700**	*531 U*	**438**	*111 U*	**414**	*118 U*

Table 2 - Sub-Parcel B9-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B5-027-SB-1 1/20/2016	B5-027-SB-5 1/20/2016	B5-028-SB-1 1/20/2016	B5-028-SB-4.5 1/20/2016	B5-174-SB-1* 1/18/2016	B9-001-SB-1 5/29/2020	B9-001-SB-5 5/29/2020	B9-002-SB-1.5 5/29/2020	B9-002-SB-5 5/29/2020	B9-002-SB-10* 5/29/2020	B9-003-SB-1 5/29/2020
Metal													
Aluminum	mg/kg	1,100,000	**11,700**	**19,400**	**7,180**	**27,800**	**6,040**	**10,200**	**31,500**	**10,300**	**14,600**	N/A	**14,200**
Antimony	mg/kg	470	*3.2 UJ*	*3.2 UJ*	*2.8 UJ*	*3.3 UJ*	**2.6**	*2.6 UJ*	*2.8 UJ*	*2.8 UJ*	*3 UJ*	N/A	*3 UJ*
Arsenic	mg/kg	3	**9.4**	**8.9**	**5**	**10.2**	**13.2**	**5.9**	**47.5**	**6.0**	**4.0**	**3.3**	**8.5**
Barium	mg/kg	220,000	**165**	**375**	**99.6**	**677**	**117**	**111 J**	**399 J**	**122 J**	**144 J**	N/A	179 J
Beryllium	mg/kg	2,300	**1.5**	**1.8**	*0.93 U*	**2.4**	0.66 J	**1.3**	**1.9**	**1.1**	**1.2**	N/A	**1.1**
Cadmium	mg/kg	980	**2**	0.59 B	0.46 B	1.1 B	**2.1**	**1.2 J**	**4.7**	**1.6**	**0.6 J**	N/A	**2.3**
Chromium	mg/kg	120,000	200 J	61.1 J	1,710 J	97.1 J	**119**	**476**	**1,710**	**463**	**35.1**	N/A	**199**
Chromium VI	mg/kg	6.3	*1.1 UJ*	*1.1 UJ*	**6.7 J-**	0.18 J-	*1.1 U*	*1 R*	*1.2 R*	0.76 B	*1.3 R*	N/A	*1.2 R*
Cobalt	mg/kg	350	**9.8**	**10.3**	0.51 B	**9.9**	**19.7**	**5.5**	**30.7**	**4.7**	**4.1 J**	N/A	**12.6**
Copper	mg/kg	47,000	54.2 J	96.3 J	26.4 J	57.3 J	**191**	**41.9 J**	**125 J**	**46.8 J**	**19.8 J**	N/A	74.3 J
Iron	mg/kg	820,000	143,000 J	34,700 J	214,000 J	33,500 J	**167,000**	**133,000**	**87,000**	**109,000**	**13,200**	N/A	**87,400**
Lead	mg/kg	800	159 J	131 J	*2.3 UJ*	88.2 J	**219**	**82.4 J**	**658 J**	**150 J**	**72.3 J**	N/A	205 J
Manganese	mg/kg	26,000	**5,730**	**7,940**	**34,800**	**21,500**	**4,740**	**12,200**	**6,120**	**10,300**	**494**	N/A	**6,050**
Mercury	mg/kg	350	0.093 J-	*0.12 R*	*0.11 R*	0.026 J-	0.054 J	**1.2**	**0.09 J**	**1.9**	**0.041 J**	N/A	**0.33**
Nickel	mg/kg	22,000	**64.9**	**36.4**	**17.7**	**54.6**	**58.9**	**31.6**	**150**	**27.4**	**11.5**	N/A	**60.6**
Selenium	mg/kg	5,800	*4.2 U*	*4.2 U*	*3.7 U*	*4.4 U*	*3.1 U*	*3.4 UJ*	*3.7 UJ*	*3.7 UJ*	*4 UJ*	N/A	*4 UJ*
Silver	mg/kg	5,800	1.6 B	*3.2 U*	**4.8**	0.92 B	2 J	*2.6 U*	*2.8 U*	*2.8 U*	*3 U*	N/A	*3 U*
Thallium	mg/kg	12	*10.6 U*	*10.5 U*	*9.3 U*	*11 U*	*7.6 U*	**5.2 J**	**3.4 J**	**4 J**	*10 U*	N/A	7.2 J
Vanadium	mg/kg	5,800	140 J	123 J	619 J	280 J	**207**	**271 J**	**159 J**	**233 J**	**40.7 J**	N/A	406 J
Zinc	mg/kg	350,000	881 J	132 J	43 J	175 J	**682**	**434**	**1,260**	**890**	**148**	N/A	**816**
Other													
Cyanide	mg/kg	150	0.91 J+	1.5 J+	*0.56 U*	0.46 J+	**0.71**	**2.1 J+**	**1.1 J+**	**3 J+**	**0.36 J+**	N/A	1.6 J+

Detections above reporting limit in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
B9-009-SB-1 sample was excavated
*indicates non-validated data
N/A indicates that the parameter was not analyzed for this sample
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 2 - Sub-Parcel B9-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B9-003-SB-5	B9-004-SB-1	B9-004-SB-5	B9-005-SB-1	B9-005-SB-4	B9-006-SB-1	B9-006-SB-8	B9-007-SB-1*	B9-007-SB-5*	B9-007-SB-10*	B9-008-SB-1*
			5/29/2020	5/29/2020	43980	5/29/2020	5/29/2020	5/29/2020	5/29/2020	6/1/2020	6/1/2020	6/1/2020	5/27/2020
Metal													
Aluminum	mg/kg	1,100,000	**11,700**	**15,200**	**7,770**	**13,000**	**29,400**	**29,700**	**8,320**	**14,000**	**11,300**	*N/A*	**15,900**
Antimony	mg/kg	470	*2.9 UJ*	*2.7 UJ*	7.3 J	*2.6 UJ*	*2.5 UJ*	*2.5 UJ*	3.1 J	*2.5 U*	*3 U*	*N/A*	*2.7 U*
Arsenic	mg/kg	3	**5.8**	**10.4**	**17.7**	**15.8**	**3**	**4.5**	**16**	**3.1**	**4.5**	**5.5**	**3**
Barium	mg/kg	220,000	145 J	206 J	196 J	232 J	523 J	244 J	148 J	**407**	**88.7**	*N/A*	**79.5**
Beryllium	mg/kg	2,300	**0.97**	**1.4**	0.66 J	**1.7**	**3.3**	**5.6**	**0.9**	**1.2**	0.69 J	*N/A*	0.52 J
Cadmium	mg/kg	980	**1.6**	**2.7**	**4**	**5.1**	0.72 J	0.51 J	**2.2**	**11.2**	0.74 J	*N/A*	1.2 J
Chromium	mg/kg	120,000	**430**	**190**	**248**	**291**	**455**	**129**	**12.3**	**562**	**42.8**	*N/A*	**698**
Chromium VI	mg/kg	6.3	0.77 B	*1.1 R*	1.1 B	*1.1 R*	0.7 B	*1.1 R*	*1.1 R*	0.68 J	*1.2 U*	*N/A*	**2.7**
Cobalt	mg/kg	350	**8.8**	**13**	**34.1**	**15.4**	3.5 J	1.8 J	**16.9**	**5.2**	**5.3**	*N/A*	**5.3**
Copper	mg/kg	47,000	71.8 J	94.7 J	288 J	67.8 J	23.7 J	17.2 J	153 J	**68.4**	**20.2**	*N/A*	**49.6**
Iron	mg/kg	820,000	**59,300**	**76,000**	**192,000**	**75,000**	**41,100**	**27,200**	**162,000**	**73,100**	**17,700**	*N/A*	**183,000**
Lead	mg/kg	800	174 J	239 J	**1,790 J**	225 J	24.4 J	48.3 J	57.6 J	**187**	**51**	*N/A*	**58.1**
Manganese	mg/kg	26,000	**9,170**	**8,440**	**5,010**	**15,500**	**21,400**	**6,180**	**29,100**	**11,300**	**1,010**	*N/A*	**24,700**
Mercury	mg/kg	350	**0.19**	**0.32**	**0.2**	**0.5**	**0.47**	**0.14**	*0.11 U*	**46.9**	0.019 J	*N/A*	0.11 J
Nickel	mg/kg	22,000	**25.9**	**49.9**	**121**	**64.4**	**13.8**	**13.5**	**32.6**	**39.3**	**14.5**	*N/A*	**51.5**
Selenium	mg/kg	5,800	*3.8 UJ*	*3.6 UJ*	*3.6 UJ*	*3.5 UJ*	*3.4 UJ*	*3.4 UJ*	*3.4 UJ*	*3.4 U*	*3.9 U*	*N/A*	*3.7 U*
Silver	mg/kg	5,800	*2.9 U*	*2.7 U*	*2.7 U*	*2.6 U*	*2.5 U*	*2.5 U*	1.3 J	*2.5 U*	*3 U*	*N/A*	*2.7 U*
Thallium	mg/kg	12	**19.2 J**	3.4 J	**12.3 J**	**18.2 J**	**23.1 J**	*8.5 U*	4.4 J	6.4 J	*9.9 U*	*N/A*	*9.1 U*
Vanadium	mg/kg	5,800	1,700 J	189 J	1,040 J	1,440 J	1,930 J	80.5 J	35.2 J	**442**	**81.9**	*N/A*	**555**
Zinc	mg/kg	350,000	**619**	**546**	**1,300**	**2,750**	**252**	**109**	**517**	**553**	**124**	*N/A*	**240**
Other													
Cyanide	mg/kg	150	1 J+	13.3 J+	5.1 J+	1.4 J+	1.4 J+	2.3 J+	1.1 J+	**1.6**	0.2 J	*N/A*	**1.3**

Table 2 - Sub-Parcel B9-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B9-008-SB-5* 5/27/2020	B9-009-SB-1* 10/12/2020	B9-009-SB-6* 10/12/2020	B9-010-SB-1.5 5/26/2020	B9-010-SB-5 5/26/2020	B9-011-SB-2 5/26/2020	B9-011-SB-5 5/26/2020	B9-012-SB-1 5/26/2020	B9-012-SB-5 43977	B9-013-SB-1* 5/27/2020	B9-013-SB-9* 10/8/2020
Metal													
Aluminum	mg/kg	1,100,000	**6,130**	**9,690**	**5,440**	**8,280**	**8,220**	**39,600**	**22,300**	**16,200**	**8,430**	**7,590**	**23,700**
Antimony	mg/kg	470	*2.6 U*	*2.7 U*	*2.6 U*	*3.1 UJ*	*3.1 UJ*	*3.2 UJ*	*3.4 UJ*	*3.1 UJ*	*3.3 UJ*	*2.7 U*	*2.8 U*
Arsenic	mg/kg	3	**8.6**	**4.3**	**2.7**	**4.3**	**4.3**	*2.7 U*	**5.7**	**2.6**	*2.7 U*	**12.6**	**3.5**
Barium	mg/kg	220,000	**57.3**	**199**	**63.6**	76.9 J	86.3 J	332 J	371 J	120 J	81.8 J	**140**	**368**
Beryllium	mg/kg	2,300	0.35 J	0.76 J	0.24 J	0.32 J	0.42 J	**7.4**	**1.3**	0.57 J	0.32 J	0.6 J	**2.3**
Cadmium	mg/kg	980	0.95 J	0.88 J	0.4 J	0.84 J	0.94 J	*1.6 U*	0.8 J	1.1 J	0.96 J	**3.6**	0.44 J
Chromium	mg/kg	120,000	**618**	**42.9**	**160**	627 J	789 J	137 J	61.9 J	770 J	996 J	**250**	**67.4**
Chromium VI	mg/kg	6.3	*1.1 U*	*1.2 U*	*1 U*	*1.1 R*	*1.1 R*	*1.1 R*	*1.2 R*	1.4 J-	*1.1 R*	0.87 J	*1.2 U*
Cobalt	mg/kg	350	**8.7**	3 J	1.9 J	**8.1**	**5.2**	0.69 J	**8.3**	**6.3**	5.2 J	**13.9**	**8.1**
Copper	mg/kg	47,000	**75.2**	**31.5**	**15.2**	**41.5**	**49.1**	3.6 J	**63.9**	**59.3**	**55.6**	**172**	**14.3**
Iron	mg/kg	820,000	**268,000**	**20,500**	**31,600**	**150,000**	**181,000**	**28,700**	**32,900**	**158,000**	**179,000**	**92,400**	**20,400**
Lead	mg/kg	800	**45.7**	**47.4**	**29.4**	60.7 J	50.2 J	7.8 J	196 J	73.7 J	52.4 J	**333**	**172**
Manganese	mg/kg	26,000	**15,600**	**1,740**	**3,380**	**14,600**	**14,100**	**5,300**	**1,540**	**19,000**	**17,400**	**5,340**	**4,070**
Mercury	mg/kg	350	**0.13**	0.077 J	0.074 J	0.097 J	0.1 J	*0.11 U*	*0.11 U*	**0.11**	0.1 J	**1.4**	*0.11 U*
Nickel	mg/kg	22,000	**62.1**	**14.9**	**9.2**	**43.4**	**38.6**	3.6 J	**26.4**	**46.5**	**40.3**	**168**	8.1 J
Selenium	mg/kg	5,800	*3.5 U*	*3.6 U*	*3.5 U*	*4.1 U*	*4.1 U*	*4.3 U*	*4.6 U*	*4.1 U*	*4.3 U*	*3.6 U*	*3.7 U*
Silver	mg/kg	5,800	*2.6 U*	*2.7 U*	*2.6 U*	*3.1 UJ*	*3.1 UJ*	*3.2 UJ*	*3.4 UJ*	*3.1 UJ*	*3.3 UJ*	*2.7 U*	*2.8 U*
Thallium	mg/kg	12	*8.7 U*	*8.9 U*	3 J	*10.2 U*	*10.3 U*	*10.7 U*	*11.5 U*	*10.2 U*	*10.9 U*	*9 U*	*9.3 U*
Vanadium	mg/kg	5,800	**426**	**57.1**	**140**	588 J	740 J	116 J	65.9 J	805 J	598 J	**484**	**158**
Zinc	mg/kg	350,000	**227**	**325**	**97.7**	214 J	202 J	12.2 J	294 J	416 J	226 J	**1,010**	**125**
Other													
Cyanide	mg/kg	150	**1**	**1.3**	0.48 J	**1.3**	**1.5**	0.57 J	**2.1**	**1.9**	**1.8**	**1.5**	0.75 J

Table 2 - Sub-Parcel B9-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B9-013-SB-10* 10/8/2020	B9-014-SB-1* 5/27/2020	B9-014-SB-5* 5/27/2020	B9-014-SB-10* 10/8/2020	B9-017-SB-1* 5/27/2020	B9-017-SB-5* 5/27/2020	B9-017-SB-10* 5/27/2020	B9-018-SB-1* 5/27/2020	B9-018-SB-8* 5/27/2020	B9-018-SB-10* 5/27/2020
Metal												
Aluminum	mg/kg	1,100,000	**21,100**	**9,730**	**11,400**	*N/A*	**9,800**	**44,300**	*N/A*	**9,540**	**9,700**	*N/A*
Antimony	mg/kg	470	*2.7 U*	*2.7 U*	**3**	*N/A*	*2.7 U*	*2.6 U*	*N/A*	*2.6 U*	*2.9 U*	*N/A*
Arsenic	mg/kg	3	**4.9**	**4.3**	**56**	**10.4**	*2.2 U*	**4**	**10.1**	**8.5**	**10.8**	**32.2**
Barium	mg/kg	220,000	**256**	**100**	**187**	*N/A*	**66.2**	**646**	*N/A*	**141**	**82.3**	*N/A*
Beryllium	mg/kg	2,300	**1.7**	0.79 J	**5.7**	*N/A*	0.37 J	**6.2**	*N/A*	**0.97**	0.6 J	*N/A*
Cadmium	mg/kg	980	0.6 J	0.57 J	**6.7**	*N/A*	0.94 J	0.33 J	*N/A*	**1.8**	1.1 J	*N/A*
Chromium	mg/kg	120,000	**54**	**97.3**	**120**	*N/A*	**633**	**13**	*N/A*	**673**	**13.8**	*N/A*
Chromium VI	mg/kg	6.3	*1.1 U*	0.71 J	*1.3 U*	*N/A*	*1.1 U*	*1.1 U*	*N/A*	*1.1 U*	*1.2 U*	*N/A*
Cobalt	mg/kg	350	**5.2**	3.5 J	**43.3**	*N/A*	**4.5**	2.7 J	*N/A*	**8.9**	**70.6**	*N/A*
Copper	mg/kg	47,000	**15.2**	**25.8**	**968**	*N/A*	**42.8**	**10.9**	*N/A*	**108**	**1,120**	*N/A*
Iron	mg/kg	820,000	**25,100**	**20,800**	**153,000**	*N/A*	**161,000**	**13,300**	*N/A*	**175,000**	**205,000**	*N/A*
Lead	mg/kg	800	**30.4**	**83.9**	**1,470**	**18.4**	**52.1**	**5.8**	*N/A*	**188**	**215**	*N/A*
Manganese	mg/kg	26,000	**3,090**	**1,730**	**1,950**	*N/A*	**13,100**	**7,960**	*N/A*	**17,200**	**18,400**	*N/A*
Mercury	mg/kg	350	*0.11 U*	**1.4**	**2.2**	*N/A*	0.083 J	*0.11 U*	*N/A*	**0.78**	*0.11 U*	*N/A*
Nickel	mg/kg	22,000	**13**	**21.3**	**521**	*N/A*	**34.3**	2.5 J	*N/A*	**86**	**20.9**	*N/A*
Selenium	mg/kg	5,800	*3.6 U*	*3.6 U*	*4 U*	*N/A*	*3.5 U*	2.7 J	*N/A*	*3.5 U*	*3.9 U*	*N/A*
Silver	mg/kg	5,800	*2.7 U*	*2.7 U*	*3 U*	*N/A*	*2.7 U*	*2.6 U*	*N/A*	*2.6 U*	0.69 J	*N/A*
Thallium	mg/kg	12	*9.1 U*	*9.1 U*	*10 U*	*N/A*	*8.9 U*	*8.7 U*	*N/A*	*8.7 U*	*9.8 U*	*N/A*
Vanadium	mg/kg	5,800	**245**	**82.9**	**411**	*N/A*	**447**	**50.3**	*N/A*	**1,030**	**49.1**	*N/A*
Zinc	mg/kg	350,000	**59.6**	**161**	**6,070**	*N/A*	**362**	**10.4**	*N/A*	**430**	**759**	*N/A*
Other												
Cyanide	mg/kg	150	**1.1**	0.29 J	1.1 J	*N/A*	1.1 J	0.43 J	*N/A*	**3.3**	0.73 J	*N/A*

Table 3 - Sub-Parcel B9-1
Summary of Organics Detected in Groundwater

Parameter	Units	PAL	SW-037-MWS	SW-038-MWS	SW-039-MWS	SW-073-MWS	SW16-PZM003
			2/2/2016	2/2/2016	2/2/2016	2/2/2016	12/9/2015
Volatile Organic Compounds							
1,1-Dichloroethane	µg/L	2.7	1 U	1 U	1 U	1 U	0.38 J
Acetone	µg/L	14,000	10 UJ	10 UJ	10 UJ	6.8 J	10 R
Chloroform	µg/L	0.22	**3**	1 U	1 U	1 U	1 U
Ethylbenzene	µg/L	700	0.58 J	1 U	1 U	0.91 J	1 U
Toluene	µg/L	1,000	1 U	1 U	1 U	0.71 J	1 U
Trichloroethene	µg/L	5	0.6 J	1 U	1 U	1 U	1 U
Xylenes	µg/L	10,000	1.5 J	3 U	3 U	**4.1**	3 U
Semi-Volatile Organic Compounds^							
1,4-Dioxane	µg/L	0.46	0.063 J	0.041 J	0.1 U	0.1 U	**0.36**
2-Methylnaphthalene	µg/L	36	0.1 U	0.05 J	**0.21**	**0.59**	0.1 U
Acenaphthene	µg/L	530	0.1 U	0.037 J	0.03 J	**0.37**	0.1 U
Acenaphthylene	µg/L	530	0.1 U	0.1 U	0.1 U	0.023 J	0.1 U
Anthracene	µg/L	1,800	0.018 J	0.09 J	0.046 J	**0.28**	0.034 J
Benz[a]anthracene	µg/L	0.03	0.016 J	0.1 U	0.1 UJ	0.043 J	0.1 U
Carbazole	µg/L		1 U	1 U	1 U	0.23 J	1 U
Chrysene	µg/L	25	0.1 U	0.1 U	0.1 UJ	0.03 J	0.1 U
Fluoranthene	µg/L	800	0.029 J	0.015 J	0.026 J	**0.42**	0.052 J
Fluorene	µg/L	290	0.1 U	0.02 J	0.026 J	**0.22**	0.061 J
Naphthalene	µg/L	0.12	0.055 B	0.099 B	**0.11**	**0.42**	0.027 B
Pentachlorophenol	µg/L	1	2.6 U	2.5 U	**1 J**	2.5 U	2.5 U
Phenanthrene	µg/L		0.027 J	0.033 J	**0.11**	**0.63**	**0.21**
Phenol	µg/L	5,800	1 U	1 U	1 U	0.27 J	1 U
Pyrene	µg/L	120	0.025 J	0.1 U	0.035 J	**0.42**	0.038 J
TPH							
Diesel Range Organics	µg/L	47	**345 J**	**489 J**	**598 J**	**929 J**	**225 J**

Detections in bold

Values in red indicate an exceedance of the Project Action Limit (PAL)

^PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.

J: The positive result reported for this analyte is a quantitative estimate.

B: This analyte was not detected substantially above the level of the associated method or field blank.

R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 4 - Sub-Parcel B9-1
Summary of Inorganics Detected in Groundwater

Parameter	Units	PAL	SW-037-MWS	SW-038-MWS	SW-039-MWS	SW-073-MWS	SW16-PZM003
			2/2/2016	2/2/2016	2/2/2016	2/2/2016	12/9/2015
Metal							
Aluminum	µg/L	20,000	**770**	**250**	**125**	**125**	**4,370**
Barium	µg/L	2,000	**71.3**	**64.5**	**51.5**	**149**	**13.1**
Beryllium	µg/L	4	*1 U*	*1 U*	*1 U*	*1 U*	**5.1**
Cadmium	µg/L	5	*3 U*	*3 U*	*3 U*	*3 U*	1.8 J
Chromium	µg/L	100	0.99 J	**17.3**	0.81 J	**8.8**	1.7 J
Chromium VI	µg/L	0.035	*10 U*	**5 J**	*10 U*	*10 U*	*10 U*
Cobalt	µg/L	6	*5 U*	*5 U*	*5 U*	*5 U*	**158**
Copper	µg/L	1,300	*5 U*	*5 U*	*5 U*	*5 U*	**22.6**
Iron	µg/L	14,000	29.5 B	*70 U*	13 B	*70 U*	**8,680**
Manganese	µg/L	430	**11.3**	*5 U*	1.6 B	*5 U*	**2,360**
Mercury	µg/L	2	*0.2 U*	*0.2 U*	*0.2 U*	*0.2 U*	0.06 B
Nickel	µg/L	390	*10 U*	0.93 J	*10 U*	0.75 B	220 J
Selenium	µg/L	50	*8 U*	4 J	5.4 J	6.4 J	*8 U*
Thallium	µg/L	2	*10 U*	*10 U*	**4.1 J**	*10 U*	*10 U*
Vanadium	µg/L	86	**61.3**	**111**	2.8 B	**17.7**	1.6 B
Zinc	µg/L	6,000	*10 U*	*10 U*	*10 U*	*10 U*	**403**
Aluminum, Dissolved	µg/L	20,000	**699**	**249**	**120**	**125**	**4,260**
Barium, Dissolved	µg/L	2,000	**67.3**	**64.3**	**51.4**	**150**	**13**
Beryllium, Dissolved	µg/L	4	*1 U*	*1 U*	*1 U*	*1 U*	**5.2**
Cadmium, Dissolved	µg/L	5	*3 U*	*3 U*	*3 U*	*3 U*	1.6 J
Chromium, Dissolved	µg/L	100	1 J	**17.4**	*5 U*	**9.7**	1.8 B
Cobalt, Dissolved	µg/L	6	*5 U*	*5 U*	*5 U*	*5 U*	**153**
Copper, Dissolved	µg/L	1,300	*5 U*	*5 U*	*5 U*	*5 U*	**18.8**
Iron, Dissolved	µg/L	14,000	13.9 B	*70 U*	*70 U*	12.1 B	**8,840**
Manganese, Dissolved	µg/L	430	1.4 B	*5 U*	*5 U*	*5 U*	**2,280 J**
Nickel, Dissolved	µg/L	390	*10 U*	0.99 B	1 B	0.7 B	212 J
Selenium, Dissolved	µg/L	50	*8 U*	*8 U*	3.7 J	7.1 J	*8 U*
Vanadium, Dissolved	µg/L	86	**61.5**	**108**	2.6 B	**17.6**	1.4 B
Zinc, Dissolved	µg/L	6,000	0.67 B	1.3 B	1.2 B	1.7 B	388 J
Other							
Cyanide	µg/L	200	4.6 J	*10 U*	*10 U*	*10 U*	*10 U*

Detections above reporting limit in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative estimate.
B: This analyte was not detected substantially above the level of the associated method or field blank.

Table 5 - Sub-Parcel B9-1
Cumulative Vapor Intrusion Comparison

				SW-037-MWS		SW-038-MWS		SW-039-MWS		SW-073-MWS		SW16-PZM003	
				2/2/2016		2/2/2016		2/2/2016		2/2/2016		12/9/2015	
Parameter	Type	Organ Systems	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk													
1,4-Dioxane	SVOC		130,000	0.063 J	4.85E-12	0.041 J	3.2E-12	0.1 U	0	0.1 U	0	0.36	2.8E-11
Naphthalene	SVOC		200	0.055 B	2.75E-09	0.099 B	5.0E-09	0.11	5.5E-09	0.42	2.1E-08	0.027 B	1.4E-09
1,1-Dichloroethane	VOC		330	1 U	0	1 U	0	1 U	0	1 U	0	0.38 J	1.2E-08
Chloroform	VOC		36	3	8.33E-07	1 U	0	1 U	0	1 U	0	1 U	0
Ethylbenzene	VOC		150	0.58 J	3.9E-08	1 U	0	1 U	0	0.91 J	6.1E-08	1 U	0
Cumulative Vapor Intrusion Cancer Risk					9E-07		5E-09		6E-09		8E-08		1E-08
Non-Cancer Risk													
Trichloroethene	VOC	Immune	22	0.6 J	2.7E-02	1 U	0	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					3E-02		0		0		0		0
Cyanide	Other	Reproductive	840	4.6 J	1.3	10 U	0	10 U	0	10 U	0	10 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					1		0		0		0		0

Yellow highlighted values indicate exceedances of the cumulative vapor intrusion criteria: TCR>1E-05 or THI>1

Conc. = Concentration
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
B: This analyte was not detected substantially above the level of the associated method or field blank.
J: The positive result reported for this analyte is a quantitative estimate.

Table 6 - Sub-Parcel B9-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
1,1-Biphenyl	92-52-4	B9-010-SB-1.5	0.19		0.02	0.12	35	28.57	410	20	no
1,4-Dioxane	123-91-1	B9-013-SB-10	0.10		0.10	0.10	6	16.67	24	450	no
2-Butanone (MEK)	78-93-3	B9-013-SB-9	0.0051	J	0.0048	0.005	13	15.38		19,000	no
2-Methylnaphthalene	91-57-6	B9-008-SB-1	0.31		0.001	0.12	35	88.57		300	no
Acenaphthene	83-32-9	B9-014-SB-5	0.084		0.002	0.03	35	77.14		4,500	no
Acenaphthylene	208-96-8	B9-014-SB-5	1.70		0.001	0.18	36	91.67			no
Acetone	67-64-1	B5-028-SB-4.5	0.075		0.006	0.02	13	38.46		67,000	no
Acetophenone	98-86-2	B9-004-SB-1	0.061	J	0.02	0.03	35	25.71		12,000	no
Aluminum	7429-90-5	B9-017-SB-5	44,300		5,440	15,111	34	100.00		110,000	no
Anthracene	120-12-7	B9-014-SB-5	1.10		0.0008	0.18	36	91.67		23,000	no
Antimony	7440-36-0	B9-004-SB-5	7.30	J	2.6000	4.00	34	11.76		47	no
Aroclor 1232	11141-16-5	B9-010-SB-1.5	0.12	J	0.06	0.09	22	31.82	0.72		no
Aroclor 1248	12672-29-6	B9-018-SB-1	0.05	J	0.05	0.05	22	9.09	0.95		no
Aroclor 1254	11097-69-1	B9-007-SB-1	0.55		0.06	0.26	22	18.18	0.97	2	no
Aroclor 1260	11096-82-5	B5-174-SB-1	2.10		0.18	0.85	22	13.64	0.99		YES (C)
Arsenic	7440-38-2	B9-014-SB-5	56.0		2.6	9.55	38	92.11	3	48	YES (C/NC)
Barium	7440-39-3	B5-028-SB-4.5	677		57.3	213	34	100.00		22,000	no
Benz[a]anthracene	56-55-3	B9-014-SB-5	7.70		0.002	0.81	41	95.12	21		no
Benzaldehyde	100-52-7	B9-004-SB-1	0.10	J	0.02	0.04	33	27.27	820	12,000	no
Benzo[a]pyrene	50-32-8	B9-014-SB-5	5.70		0.002	0.70	39	94.87	2.1	22	YES (C)
Benzo[b]fluoranthene	205-99-2	B9-014-SB-5	10.0		0.008	1.09	44	93.18	21		no
Benzo[g,h,i]perylene	191-24-2	B9-014-SB-5	5.50		0.002	0.55	37	91.89			no
Benzo[k]fluoranthene	207-08-9	B9-014-SB-5	3.90		0.004	0.47	36	91.67	210		no
Beryllium	7440-41-7	B9-011-SB-2	7.40		0.24	1.68	34	97.06	6,900	230	no
bis(2-Ethylhexyl)phthalate	117-81-7	B9-014-SB-5	0.69	J	0.02	0.16	35	28.57	160	1600	no
Cadmium	7440-43-9	B9-007-SB-1	11.2		0.33	1.98	34	88.24	9300	98	no
Caprolactam	105-60-2	B9-004-SB-5	0.13	J	0.022	0.05	35	25.71		40,000	no
Caprolactam	105-60-2	B9-004-SB-1	0.13	J	0.022	0.05	35	25.71		40,000	no
Carbazole	86-74-8	B9-014-SB-5	0.57	J	0.021	0.14	35	42.86			no
Carbon disulfide	75-15-0	B9-013-SB-9	0.005	J	0.002	0.003	13	30.77		350	no
Chloroform	67-66-3	B5-027-SB-5	0.016		0.02	0.02	13	7.69	1	100	no

Table 6 - Sub-Parcel B9-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
Chromium	7440-47-3	B5-028-SB-1	1,710	J	12.3	340	34	100.00		180,000	no
Chromium VI	18540-29-9	B5-028-SB-1	6.7	J-	0.18	1.89	24	29.17	6	350	YES (C)
Chrysene	218-01-9	B9-014-SB-5	6.5		0.004	0.76	40	92.50	2100		no
Cobalt	7440-48-4	B9-018-SB-8	70.6		0.69	11.5	34	97.06	1,900	35	YES (NC)
Copper	7440-50-8	B9-018-SB-8	1,120		3.60	124	34	100.00		4,700	no
Cyanide	57-12-5	B9-004-SB-1	13.3	J+	0.20	1.70	34	97.06		120	no
Cyclohexane	110-82-7	B5-028-SB-4.5	0.007	J	0.002	0.004	13	23.08		2,700	no
Dibenz[a,h]anthracene	53-70-3	B9-014-SB-5	1.3		0.001	0.15	36	91.67	2.1		no
Di-n-butylphthalate	84-74-2	B9-007-SB-1	0.28	J	0.03	0.11	35	31.43		8,200	no
Di-n-butylphthalate	84-74-2	B9-012-SB-5	0.28	J	0.03	0.11	35	31.43		8,200	no
Di-n-ocytlphthalate	117-84-0	B9-018-SB-8	0.22	J	0.22	0.22	35	2.86		820	no
Fluoranthene	206-44-0	B9-014-SB-5	12.0		0.002	1.28	46	97.83		3,000	no
Fluorene	86-73-7	B9-013-SB-1	0.17		0.001	0.03	35	77.14		3,000	no
Indeno[1,2,3-c,d]pyrene	193-39-5	B9-014-SB-5	5.80		0.001	0.60	37	94.59	21		no
Iron	7439-89-6	B9-008-SB-5	268,000		13,300	102,991	34	100.00		82,000	YES (NC)
Lead^	7439-92-1	B9-004-SB-5	1,790	J	5.80	199.66	35	97.14		800	YES (NC)
Manganese	7439-96-5	B5-028-SB-1	34,800		1,010	11,120	34	100.00		2,600	YES (NC)
Mercury	7439-97-6	B9-007-SB-1	46.9		0.02	2.24	32	78.13		35	YES (NC)
Naphthalene	91-20-3	B9-008-SB-5	2.00		0.006	0.56	40	87.50	8.6	59	no
Nickel	7440-02-0	B9-014-SB-5	521		2.50	55.3	34	100.00	64,000	2200	no
N-Nitrosodiphenylamine	86-30-6	B9-004-SB-1	0.02	J	0.02	0.02	35	2.86	470		no
PCBs (total)*	1336-36-3	B5-174-SB-1	2.10	J	0.06	0.71	22	22.73	0.94		YES (C)
Phenanthrene	85-01-8	B9-014-SB-5	5.90		0.002	0.88	44	93.18			no
Phenol	108-95-2	B9-013-SB-10	0.03	J	0.019	0.02	30	10.00		25,000	no
Pyrene	129-00-0	B9-014-SB-5	9.00		0.0007	1.05	45	100.00		2300	no
Selenium	7782-49-2	B9-017-SB-5	2.70	J	2.70	2.70	34	2.94		580	no
Silver	7440-22-4	B5-028-SB-1	4.80		0.69	2.20	34	11.76		580	no
Tetrachloroethene	127-18-4	B5-028-SB-4.5	0.03		0.024	0.03	13	15.38	100	39	no
Thallium	7440-28-0	B9-005-SB-4	23.1	J	3.00	10.8	34	26.47		1.2	YES (NC)
Toluene	108-88-3	B9-013-SB-10	0.001	J	0.001	0.001	13	7.69		4,700	no
Vanadium	7440-62-2	B9-005-SB-4	1,930	J	35.2	464	34	100.00		580	YES (NC)
Zinc	7440-66-6	B9-014-SB-5	6,070		10.4	610	34	100.00		35,000	no

J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.

COPC = Constituent of Potential Concern
TR = Target Risk
HQ = Hazard Quotient
C = Compound was identified as a cancer COPC
NC = Compound was identified as a non-cancer COPC

*PCBs (total) include the sum of all detected aroclor mixtures, including those without RSLs (e.g. Aroclor 1262, Aroclor 1268) which are not displayed.
^Lead is assessed separately through the ALM and IEUBK models.

Table 7 - Sub-Parcel B9-1
Assessment of Lead

Exposure Unit	Surface/Sub-Surface	Maximum Concentration (mg/kg)	Arithmetic Mean (mg/kg)
EU1 (2.28 ac.)	Surface	333	182
	Sub-Surface	1,470	295
	Pooled	1,470	244
EU2 (2.30 ac.)	Surface	188	89.6
	Sub-Surface	215	80.7
	Pooled	215	84.9
Site-Wide EU-EXP (5.0 ac.)	Surface	333	132
	Sub-Surface	1,790	267
	Pooled	1,790	203

Table 8 - Sub-Parcel B9-1
Soil Exposure Point Concentrations

	EU1 (2.28 ac.)					
	EPCs - Surface Soils		**EPCs - Sub-Surface Soils**		**EPCs - Pooled Soils**	
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	**Maximum Value**	**15.8**	**Maximum Value**	**56.0**	95% Adjusted Gamma UCL	25.1
Chromium VI	**Maximum Value**	**0.87**	NA	NA	**Maximum Value**	**0.87**
Cobalt	**Maximum Value**	**19.7**	**Maximum Value**	**43.4**	95% Student's-t UCL	20.3
Iron	**Maximum Value**	**167,000**	**Maximum Value**	**162,000**	95% Student's-t UCL	114,106
Manganese	**Maximum Value**	**15,500**	**Maximum Value**	**29,100**	95% Adjusted Gamma UCL	19,426
Mercury	**Maximum Value**	**1.40**	**Maximum Value**	**2.20**	95% KM (t) UCL	1.09
Thallium	**Maximum Value**	**18.2**	**Maximum Value**	**23.1**	95% KM (t) UCL	12.3
Vanadium	**Maximum Value**	**1,440**	**Maximum Value**	**1,930**	95% Adjusted Gamma UCL	1,289
Total PCBs	**Maximum Value**	**2.10**	NA	NA	**Maximum Value**	**2.10**
Benzo[a]pyrene	**Maximum Value**	**1.40**	**Maximum Value**	**5.70**	Gamma Adjusted KM-UCL	3.73

Bold indicates maximum value used as the EPC
NA indicates no detections

Table 8 - Sub-Parcel B9-1
Soil Exposure Point Concentrations

	EU2 (2.30 ac.)					
	EPCs - Surface Soils		**EPCs - Sub-Surface Soils**		**EPCs - Pooled Soils**	
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	**Maximum Value**	**8.50**	95% GROS Adjusted Gamma UCL	19.7	95% GROS Adjusted Gamma UCL	12.6
Chromium VI	**Maximum Value**	**2.70**	NA	NA	95% KM (t) UCL	1.39
Cobalt	**Maximum Value**	**8.90**	**Maximum Value**	**70.6**	95% Chebyshev (Mean, Sd) UCL	28.9
Iron	**Maximum Value**	**183,000**	**Maximum Value**	**268,000**	95% Chebyshev (Mean, Sd) UCL	216,490
Manganese	**Maximum Value**	**24,700**	**Maximum Value**	**18,400**	95% Student's-t UCL	15,516
Mercury	**Maximum Value**	**46.9**	**Maximum Value**	**0.13**	99% KM (Chebyshev) UCL	34.7
Thallium	**Maximum Value**	**6.40**	**Maximum Value**	**3.00**	**Maximum Value**	**6.40**
Vanadium	**Maximum Value**	**1,030**	**Maximum Value**	**740**	95% Student's-t UCL	552
Total PCBs	**Maximum Value**	**0.55**	**Maximum Value**	**0.06**	**Maximum Value**	**0.55**
Benzo[a]pyrene	**Maximum Value**	**0.87**	**Maximum Value**	**1.50**	95% KM (t) UCL	0.61

Bold indicates maximum value used as the EPC
NA indicates no detections

Table 8 - Sub-Parcel B9-1
Soil Exposure Point Concentrations

	EU1-EXP (5.0 ac.)					
	EPCs - Surface Soils		**EPCs - Sub-Surface Soils**		**EPCs - Pooled Soils**	
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	95% KM (t) UCL	8.46	KM H-UCL	16.6	KM H-UCL	11.7
Chromium VI	95% KM (t) UCL	2.56	**Maximum Value**	**0.18**	95% KM (t) UCL	1.47
Cobalt	95% KM (t) UCL	9.95	95% H-UCL	26.2	KM H-UCL	17.3
Iron	95% Student's-t UCL	138,993	95% Chebyshev (Mean, Sd) UCL	174,730	95% Chebyshev (Mean, Sd) UCL	154,718
Manganese	95% Student's-t UCL	15,383	95% Student's-t UCL	13,319	95% Adjusted Gamma UCL	14,097
Mercury	99% KM (Chebyshev) UCL	30.5	95% KM (Chebyshev) UCL	0.75	95% KM (Chebyshev) UCL	7.53
Thallium	95% KM Adjusted Gamma UCL	7.83	95% KM (t) UCL	8.41	95% KM Adjusted Gamma UCL	7.71
Vanadium	95% Student's-t UCL	599	95% Adjusted Gamma UCL	758	95% Adjusted Gamma UCL	600
Total PCBs	**Maximum Value**	**2.10**	**Maximum Value**	**0.06**	95% KM (t) UCL	0.50
Benzo[a]pyrene	95% Student's-t UCL	0.70	Gamma Adjusted KM-UCL	1.76	Gamma Adjusted KM-UCL	0.95

Bold indicates maximum value used as the EPC

Table 9 - Sub-Parcel B9-1
Surface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (2.28 ac.)					EU2 (2.30 ac.)				
			Composite Worker					Composite Worker			
			RSLs (mg/kg)		Risk Ratios			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	**15.8**	3.00	480	5.3E-06	0.03	**8.50**	3.00	480	2.8E-06	0.02
Chromium VI	**Respiratory**	**0.87**	6.30	3,500	1.4E-07	0.0002	**2.70**	6.30	3,500	4.3E-07	0.0008
Cobalt	**Thyroid**	**19.7**	1,900	350	1.0E-08	0.06	**8.90**	1,900	350	4.7E-09	0.03
Iron	**Gastrointestinal**	**167,000**		820,000		0.2	**183,000**		820,000		0.2
Manganese	**Nervous**	**15,500**		26,000		0.6	**24,700**		26,000		1
Mercury	**Nervous**	**1.40**		350		0.004	**46.9**		350		0.1
Thallium	**Dermal**	**18.2**		12		2	**6.40**		12		0.5
Vanadium	**Dermal**	**1,440**		5,800		0.2	**1,030**		5,800		0.2
Total PCBs		**2.10**	0.94		2.2E-06		**0.55**	0.94		5.9E-07	
Benzo[a]pyrene	**Developmental**	**1.40**	2.1	220	6.7E-07	0.006	**0.87**	2.1	220	4.1E-07	0.004
					8E-06	↓				**4E-06**	↓

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Bold indicates maximum value

EPC: Exposure Point Concentration

HQ: Hazard Quotient

HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	2
	Gastrointestinal	0
	Nervous	1
	Thyroid	0
	Developmental	0
	Respiratory	0

Total HI	Cardiovascular	0
	Dermal	1
	Gastrointestinal	0
	Nervous	1
	Thyroid	0
	Developmental	0
	Respiratory	0

Table 10 - Sub-Parcel B9-1
Subsurface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (2.28 ac.)					EU2 (2.30 ac.)				
			Composite Worker					Composite Worker			
			RSLs (mg/kg)		Risk Ratios			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	**56.0**	3.00	480	1.9E-05	0.1	19.7	3.00	480	6.6E-06	0.04
Chromium VI	**Respiratory**	NA	6.30	3,500			NA	6.30	3,500		
Cobalt	**Thyroid**	**43.4**	1,900	350	2.3E-08	0.1	**70.6**	1,900	350	3.7E-08	0.2
Iron	**Gastrointestinal**	**162,000**		820,000		0.2	**268,000**		820,000		0.3
Manganese	**Nervous**	**29,100**		26,000		1	**18,400**		26,000		0.7
Mercury	**Nervous**	**2.20**		350		0.006	**0.13**		350		0.0004
Thallium	**Dermal**	**23.1**		12		2	**3.00**		12		0.3
Vanadium	**Dermal**	**1,930**		5,800		0.3	**740**		5,800		0.1
Total PCBs		NA	0.94				**0.06**	0.94		6.4E-08	
Benzo[a]pyrene	**Developmental**	**5.70**	2.1	220	2.7E-06	0.03	**1.50**	2.1	220	7.1E-07	0.007
					2E-05	↓				**7E-06**	↓

RSLs were obtained from the EPA Regional Screening Levels at
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
Bold indicates maximum value
NA indicates no detections
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	2
	Gastrointestinal	0
	Nervous	1
	Thyroid	0
	Developmental	0
	Respiratory	0

Total HI	Cardiovascular	0
	Dermal	0
	Gastrointestinal	0
	Nervous	1
	Thyroid	0
	Developmental	0
	Respiratory	0

Table 11 - Sub-Parcel B9-1
Pooled Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (2.28 ac.)					EU2 (2.30 ac.)				
			Composite Worker					Composite Worker			
			RSLs (mg/kg)		Risk Ratios			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	25.1	3.00	480	8.4E-06	0.05	12.6	3.00	480	4.2E-06	0.03
Chromium VI	**Respiratory**	**0.87**	6.30	3,500	1.4E-07	0.0002	1.39	6.30	3,500	2.2E-07	0.0004
Cobalt	**Thyroid**	20.3	1,900	350	1.1E-08	0.06	28.9	1,900	350	1.5E-08	0.08
Iron	**Gastrointestinal**	114,106		820,000		0.1	216,490		820,000		0.3
Manganese	**Nervous**	19,426		26,000		0.7	15,516		26,000		0.6
Mercury	**Nervous**	1.09		350		0.003	34.7		350		0.1
Thallium	**Dermal**	12.3		12		1	**6.40**		12		0.5
Vanadium	**Dermal**	1,289		5,800		0.2	552		5,800		0.1
Total PCBs		**2.10**	0.94		2.2E-06		**0.55**	0.94		5.9E-07	
Benzo[a]pyrene	**Developmental**	3.73	2.1	220	1.8E-06	0.02	0.61	2.1	220	2.9E-07	0.003
					1E-05	↓				**5E-06**	↓

RSLs were obtained from the EPA Regional Screening Levels at
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Bold indicates maximum value

EPC: Exposure Point Concentration

HQ: Hazard Quotient

HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	1
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Thyroid	0
	Respiratory	0

Total HI	Cardiovascular	0
	Dermal	1
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Thyroid	0
	Respiratory	0

Table 12 - Sub-Parcel B9-1
Surface Soils
Construction Worker Risk Ratios

20 Day		EU1-EXP (5.00 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	8.46	189	1,188	4.5E-08	0.007
Chromium VI	**Respiratory**	2.56	255	9,954	1.0E-08	0.0003
Cobalt	**Thyroid**	9.95	25,696	10,783	3.9E-10	0.0009
Iron	**Gastrointestinal**	138,993		3,006,767		0.05
Manganese	**Nervous**	15,383		44,376		0.3
Mercury	**Nervous**	30.5		31.0		0.985
Thallium	**Dermal**	7.83		172		0.05
Vanadium	**Dermal**	599		19,339		0.03
Total PCBs		**2.10**	43.0		4.9E-08	
Benzo[a]pyrene	**Developmental**	0.70	207	48.5	3.4E-09	0.01
					1E-07	↓

SSLs calculated using equations in 2002 EPA Supplemental Guidance
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness
Bold indicates maximum value
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Thyroid	0
	Respiratory	0

Table 13 - Sub-Parcel B9-1
Subsurface Soils
Construction Worker Risk Ratios

20 Day		EU1-EXP (5.00 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	16.6	189	1,188	8.8E-08	0.01
Chromium VI	**Respiratory**	**0.18**	255	9,954	7.0E-10	0.00002
Cobalt	**Thyroid**	26.2	25,696	10,783	1.0E-09	0.002
Iron	**Gastrointestinal**	174,730		3,006,767		0.06
Manganese	**Nervous**	13,319		44,376		0.3
Mercury	**Nervous**	0.75		31.0		0.02
Thallium	**Dermal**	8.41		172		0.05
Vanadium	**Dermal**	758		19,339		0.04
Total PCBs		**0.06**	43.0		1.4E-09	
Benzo[a]pyrene	**Developmental**	1.76	207	48.5	8.5E-09	0.04
					1E-07	↓

SSLs calculated using equations in 2002 EPA Supplemental Guidance
Bold indicates maximum value
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	0
	Gastrointestinal	0
	Nervous	0
	Developmental	0
	Thyroid	0
	Respiratory	0

Table 14 - Sub-Parcel B9-1
Pooled Soils
Construction Worker Risk Ratios

20 Day		EU1-EXP (5.00 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	11.7	189	1,189	6.2E-08	0.01
Chromium VI	Respiratory	1.47	256	9,955	5.7E-09	0.0001
Cobalt	Thyroid	17.3	25,971	10,802	6.7E-10	0.002
Iron	Gastrointestinal	154,718		3,006,767		0.05
Manganese	Nervous	14,097		44,502		0.3
Mercury	Nervous	7.53		31.0		0.2
Thallium	Dermal	7.71		172		0.04
Vanadium	Dermal	600		19,351		0.03
Total PCBs		0.50	42.9		1.2E-08	
Benzo[a]pyrene	Developmental	0.95	207	48.3	4.6E-09	0.02
					8E-08	↓

SSLs calculated using equations in 2002 EPA Supplemental Guidance
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Thyroid	0
	Respiratory	0

APPENDIX A

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

June 3, 2022

Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD, 21230

Attention: Ms. Barbara Brown

Subject: Request to Enter Temporary CHS Review
Tradepoint Atlantic Parcel B9

Dear Ms. Brown:

The conduct of any environmental assessment and cleanup activities on the Tradepoint Atlantic property, as well as any associated development, is subject to the requirements outlined in the following agreements:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the Maryland Department of the Environment (effective September 12, 2014); and
- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the United States Environmental Protection Agency (effective November 25, 2014).

On September 11, 2014, Tradepoint Atlantic submitted an application to the Maryland Department of the Environment's (Department) Voluntary Cleanup Program (VCP).

In consultation with the Department, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the Department and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (COMAR 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Parcel B9 and complement the statutory requirements of the Voluntary Cleanup Program (Section 7-501 of the Environment Article). Upon submission of a Site Response and Development Work Plan and completion of the remedial activities for the sub-parcel, the Department shall issue a "No Further Action" letter upon a recordation of an environmental covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the Department a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

Alternatively, Tradepoint Atlantic, or another entity may elect to submit an application for a specific sub-parcel and submit it to the VCP for review and acceptance. If the application is received after the cleanup and redevelopment activities described in this work plan are implemented and a No Further Action letter is issued by the Department pursuant to the CHS Act, the VCP shall prepare a No Further Requirements Determination for the sub-parcel.

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the work plan, the cleanup and redevelopment activities may be conducted under the oversight authority of either the VCP or the CHS Act, so long as those activities comport with this work plan.

Engineering and institutional controls approved as part of this Site Response and Development Work Plan shall be described in documentation submitted to the Department demonstrating that the exposure pathways on the sub-parcel are addressed in a manner that protects public health and the environment. This information shall support Tradepoint Atlantic's request for the issuance of a COC for the larger parcel.

Please do not hesitate to contact Tradepoint Atlantic for further information.

Thank you,

Peter Haid

Vice President Environmental
TRADEPOINT ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219
T 443.649.5055 C 732.841.7935
phaid@tradepointatlantic.com

APPENDIX B

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel B9-1

Description	Variable	Value
Days worked per week	DW	5
Exposure duration (yr)	ED	1
Hours worked per day	ET	8
A/constant (unitless) - particulate emission factor	Aconst	12.9351
B/constant (unitless) - particulate emission factor	Bconst	5.7383
C/constant (unitless) - particulate emission factor	Cconst	71.7711
Dispersion correction factor (unitless)	FD	0.185
Days per year with at least .01" precipitation	P	130
Target hazard quotient (unitless)	THQ	1
Body weight (kg)	BW	80
Averaging time - noncancer (yr)	ATnc	1
Soil ingestion rate (mg/d)	IR	330
Skin-soil adherence factor (mg/cm2)	AF	0.3
Skin surface exposed (cm2)	SA	3300
Event frequency (ev/day)	EV	1
Target cancer risk (unitless)	TR	01E-06
Averaging time - cancer (yr)	ATc	70
A/constant (unitless) - volatilization	Aconstv	2.4538
B/constant (unitless) - volatilization	Bconstv	17.566
C/constant (unitless) - volatilization	Cconstv	189.0426
Dry soil bulk density (kg/L)	Pb	1.5
Average source depth (m)	ds	3
Soil particle density (g/cm3)	Ps	2.65
Total soil porosity	Lpore/Lsoil	0.43
Air-filled soil porosity	Lair/Lsoil	0.28

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel B9-1

Area of site (ac)	Ac	5.00	EU1-EXP
Overall duration of construction (wk/yr)	EW	4	
Exposure frequency (day/yr)	EF	**20**	
Cars per day	Ca	5	
Tons per car	CaT	2	
Trucks per day	Tru	5	
Tons per truck	TrT	20	
Mean vehicle weight (tons)	w	**11**	
Derivation of dispersion factor - particulate emission factor (g/m2-s per kg/m3)	Q/Csr	**16.4**	
Overall duration of construction (hr)	tc	**672**	
Overall duration of traffic (s)	Tt	**576,000**	
Surface area (m2)	AR	**20,801**	
Length (m)	LR	**144**	
Distance traveled (km)	ΣVKT	**29**	
Particulate emission factor (m3/kg)	PEFsc	**60,989,321**	
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	**9.39**	
Total time of construction (s)	Tcv	**576,000**	

Input
Calculation

Chemical	RfD & RfC Sources	^Ingestion SF $(mg/kg\text{-}day)^{-1}$	^Inhalation Unit Risk $(ug/m^3)^{-1}$	^Subchronic RfD (mg/kg-day)	^Subchronic RfC (mg/m^3)	^GIABS	Dermally Adjusted RfD (mg/kg-day)	^ABS	^RBA	*Dia	*Diw	*Henry's Law Constant (unitless)	*Kd	*Koc	DA	Volatilization Factor - Unlimited Reservoir (m^3/kg)	Carcinogenic Ingestion/ Dermal SL (SLing/der)	Carcinogenic Inhalation SL (SLinh)	Carcinogenic SL (mg/kg)	Non-Carcinogenic Ingestion/ Dermal SL (SLing/der)	Non-Carcinogenic Inhalation SL (SLinh)	Non-Carcinogenic SL (mg/kg)
Arsenic, Inorganic	I/C	1.50E+00	4.30E-03	3.00E-04	1.50E-05	1	3.00E-04	0.03	0.6			-	2.90E+01				189	54,359	189	1,218	50,087	1,189
Chromium(VI)	A/C/I	5.00E-01	8.40E-02	5.00E-03	3.00E-04	0.025	1.25E-04	**0.01**	1			-	1.90E+01				282	2,783	256	10,055	1,001,750	9,955
Cobalt	P	-	9.00E-03	3.00E-03	2.00E-05	1	3.00E-03	**0.01**	1			-	4.50E+01					25,971	25,971	12,886	66,783	10,802
Iron	P	-	-	7.00E-01	-	1	7.00E-01	**0.01**	1			-	2.50E+01							3,006,767		3,006,767
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	**0.01**	1			-	6.50E+01							60,675	166,958	44,502
Mercuric Chloride (and other salts)	A/I	-	-	1.00E-05	3.00E-04	0.07	7.00E-07	**0.01**	1			-								31.0	1,001,750	31.0
Thallium (Soluble Salts)	P	-	-	4.00E-05	-	1	4.00E-05	**0.01**	1			-	7.10E+01							172		172
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	**0.01**	1			-	1.00E+03							20,541	333,917	19,351
PCB Total	I	2.00E+00	5.71E-04	-	-	1		0.14	1	2.40E-02	6.30E-06	1.70E-02	4.68E+02	7.80E+04	4.66E-08	1.05E+4	109	70.7	42.9			
Benzo[a]pyrene	I	1.00E+00	6.00E-04	3.00E-04	2.00E-06	1	3.00E-04	0.13	1	4.80E-02	5.60E-06	1.87E-05	3.54E+03	5.90E+05	2.37E-11	4.68E+5	223	2,965	207	955	50.8	48.3

*chemical specific parameters found in Chemical Specific Parameters Spreadsheet at https://www.epa.gov/risk/regional-screening-levels-rsls
^chemical specific parameters found in Unpaved Road Traffic calculator at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
I: chemical specific parameters found in the IRIS at https://www.epa.gov/iris
C: chemical specific parameters found in Cal EPA at https://www.dtsc.ca.gov/AssessingRisk
A: chemical specific parameters found in Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) at https://wwwn.cdc.gov/TSP/MRLS/mrlsListing.aspx
P: chemical specific parameters found in the Database of EPA PPRTVs at https://hhpprtv.ornl.gov/quickview/pprtv.php

APPENDIX C

Sparrows Point Development - PPE Standard Operational Procedure, Revision 3

Planning, Tracking/Supervision, Enforcement, and Documentation

Planning

- Response and Development Work Plan (RDWP) for each individual redevelopment sub-parcel identifies and documents site conditions.
- RDWP is reviewed and approved by regulators.
- Contractor HASP to address site-specific conditions and PPE requirements:
    - Contractor H&S professional to sign-off on PPE requirements for site workers;
    - Job Safety Analysis (JSA) to be performed for ground intrusive work.
- Project Environmental Professional (EP) assigned to each construction project – monitors project during environmentally sensitive project phases and is available to construction contractor on an as needed basis. EP responsibilities include the following:
    - Dust monitoring
    - Routine ground intrusive breathing space air monitoring
    - Soil tracking
    - Water handling oversight
    - Ground intrusive work observation
    - Notification for unexpected conditions
- Pre-construction meeting identifies EP roles and responsibilities and reviews site conditions.
- Contractor to perform job-site HazCom. HazCom to be addressed in Contractor HASP and include:
    - PPE requirements,
    - Exposure time limits,
    - Identification of chemicals of concern and potential effects of over-exposure (adverse reactions),
    - Methods and routes of potential exposure.
- All personnel that will be performing ground intrusive work within impacted soils shall sign-off on HazCom.
- If, based on a thorough review of Site conditions, it is expected that construction workers will have the potential to encounter materials considered hazardous waste under RCRA or DOT regulations, HAZWOPER-trained personnel will be utilized.

Tracking/Supervision

- Contractor to record any day that there is ground intrusive work and confirm that proper PPE is being worn.
- EP will note ground intrusive work on daily work sheets and perform at least one spot check per day.
- EP will log on daily work sheets PPE compliance for all intrusive work areas at least once per day.

- EP to take example photos of Exclusion Zones/Contamination Reduction Zones periodically.

Work Zones Delineation

- Exclusion Zone – The Exclusion Zones will include the areas proposed for excavation or with active trenches, excavations, or ground intrusive work, at a minimum. Personnel working within the exclusion zone will be required to wear Modified Level D PPE as described in this SOP. EP to take example photos of Exclusion Zones/Contamination Reduction Zones periodically. The Exclusion Zones will be identified each work day.
- Contamination Reduction Zone – This work zone is located outside of the exclusion zone, but inside of the limits of development (LOD). The Contamination Reduction Zone will be located adjacent to the Exclusion Zone, and all personal decontamination including removal of all disposable PPE/removal of soil from boots will be completed in the Contamination Reduction Zone.

Documentation

- Contractor HASP and HazCom.
- Contractor ground intrusive tracking record.
- HASP and HazCom sign-in sheets.
- EP pre-con memos.
- EP daily work sheets.
- Records documenting intrusive work and proper PPE use to be provided in completion report.

Enforcement

- Non-compliance of PPE requirements will result in disciplinary action up to and including prohibition from working on Sparrows Point.

Unknown and/or Unexpected Conditions

If unknown and/or unexpected conditions are encountered during the project that the EP determines to have a reasonable potential to significantly impact construction worker health and safety, the following will be initiated:

1. Job stoppage,
2. TPA and MDE notification,
3. Re-assessment of conditions.

Work will not continue until EP has cleared the area. If hazardous waste is identified, a HAZWOPER contractor will be brought in to address. The approved contingency plan will be implemented, where appropriate.

Modified Level D PPE

Modified Level D PPE will include, at a minimum, overalls such as polyethylene-coated Tyvek or clean washable cloth overalls, latex (or similar) disposable gloves (when working in wet/chemical surroundings) or work gloves, steel-toe/steel-shank high ankle work boots with taped chemical-protective over-boots (as necessary), dust mask, hard hat, safety glasses with

side shields, and hearing protection (as necessary). If chemical-protective over-boots create increased slip/trip/fall hazardous, then standard leather or rubber work boots could be used, but visible soils from the sides and bottoms of the boots must be removed upon exiting the Exclusion Zone.

APPENDIX D

CONSTRUCTION DOCUMENTS

FOR

TRADEPOINT ATLANTIC

MMM MAINTENANCE FACILITY

1331 POWERHOUSE ROAD
BALTIMORE, MD 21219
TM 111, GRID 14, PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

STANDARD DRAWING LEGEND

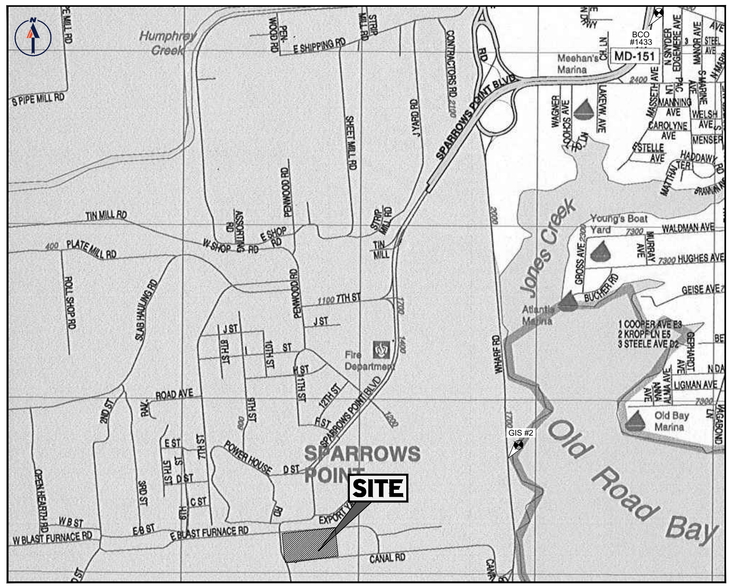
FOR ENTIRE PLAN SET

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
LIMIT OF WORK —LOW—LOW—		
LIMIT OF DISTURBANCE —LOD—LOD—		
	ONSITE PROPERTY LINE / R.O.W. LINE	
	NEIGHBORING PROPERTY LINE / INTERIOR PARCEL LINE	
	EASEMENT LINE	
	SETBACK LINE	
	CONCRETE CURB & GUTTER	CURB AND GUTTER; SPILL; TRANSITION; DEPRESSED CURB AND GUTTER
	UTILITY POLE WITH LIGHT	
	POLE LIGHT	
	TRAFFIC LIGHT	
	UTILITY POLE	
	TYPICAL LIGHT	
	ACORN LIGHT	
	TYPICAL SIGN	
	PARKING COUNTS	
170 / 169	CONTOUR LINE	190 / 187
TC 516.4 OR 516.4	SPOT ELEVATIONS	TC 516.00; TC 516.00 BC 515.55; MATCH EX 518.02 ±
SAN #	SANITARY LABEL	SAN #
X #	STORM LABEL	X #
SL	SANITARY SEWER LATERAL	SL
W	UNDERGROUND WATER LINE	W
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
C	UNDERGROUND CABLE LINE	C
	STORM SEWER	
S	SANITARY SEWER MAIN	S
	HYDRANT	
S	SANITARY MANHOLE	
D	STORM MANHOLE	
WM	WATER METER	
WV	WATER VALVE	
	GAS VALVE	
	GAS METER	
	TYPICAL END SECTION	
	HEADWALL OR ENDWALL	
	GRATE INLET	
	CURB INLET	
	CLEAN OUT	
E	ELECTRIC MANHOLE	E
T	TELEPHONE MANHOLE	T
EB	ELECTRIC BOX	EB
EP	ELECTRIC PEDESTAL	EP
	MONITORING WELL	
	TEST PIT	
	BENCHMARK	
	BORING	

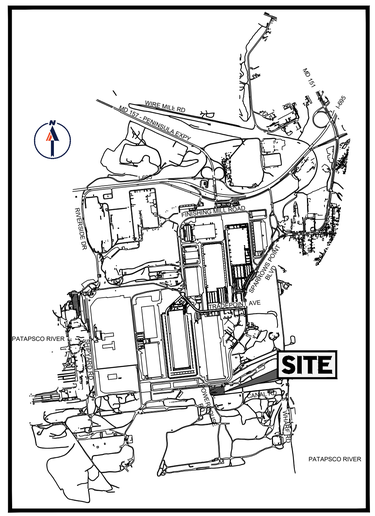
STANDARD ABBREVIATIONS

FOR ENTIRE PLAN SET

AC	ACRES
ADA	AMERICANS WITH DISABILITY ACT
ARCH	ARCHITECTURAL
BC	BOTTOM OF CURB
BF	BASEMENT FLOOR
BK	BLOCK
BL	BASELINE
BLDG	BUILDING
BM	BUILDING BENCHMARK
BRL	BUILDING RESTRICTION LINE
CF	CUBIC FEET
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CONN	CONNECTION
CONC	CONCRETE
CPP	CORRUGATED PLASTIC PIPE
CY	CUBIC YARDS
DEC	DECORATIVE
DEP	DEPRESSED
DIP	DUCTILE IRON PIPE
DOM	DOMESTIC
ELEC	ELECTRIC
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
ES	EDGE OF SHOULDER
EW	END WALL
EX	EXISTING
FES	FLARED END SECTION
FF	FINISHED FLOOR
FH	FIRE HYDRANT
FG	FINISHED GRADE
G	GRADE
GF	GARAGE FLOOR (AT DOOR)
GH	GRADE HIGHER SIDE OF WALL
GL	GRADE LOWER SIDE OF WALL
GRT	GRATE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HP	HIGH POINT
HOR	HORIZONTAL
HW	HEADWALL
INT	INTERSECTION
INV	INVERT
LF	LINEAR FOOT
LOC	LIMITS OF CLEARING
LOD	LIMITS OF DISTURBANCE
LOS	LINE OF SIGHT
LP	LOW POINT
L/S	LANDSCAPE
MAX	MAXIMUM
MIN	MINIMUM
MH	MANHOLE
MJ	MECHANICAL JOINT
OC	ON CENTER
PA	POINT OF ANALYSIS
PC	POINT CURVATURE
PCCR	POINT OF COMPOUND CURVATURE, CURB RETURN
PI	POINT OF INTERSECTION
POG	POINT OF GRADE
PROP	PROPOSED
PT	POINT OF TANGENCY
PTCR	POINT OF TANGENCY, CURB RETURN
PVC	POLYVINYL CHLORIDE PIPE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RET WALL	RETAINING WALL
R/W	RIGHT OF WAY
S	SLOPE
SAN	SANITARY SEWER
SF	SQUARE FEET
STA	STATION
STM	STORM
S/W	SIDEWALK
TBR	TO BE REMOVED
TBRL	TO BE RELOCATED
TC	TOP OF CURB
TELE	TELEPHONE
TPF	TREE PROTECTION FENCE
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
UP	UTILITY POLE
W	WIDE
W/L	WATER LINE
W/M	WATER METER
±	PLUS OR MINUS
°	DEGREE
Ø	DIAMETER
#	NUMBER



LOCATION MAP
COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=1,000'



VICINITY MAP
SCALE: 1"=3000'

REFERENCES

- EXISTING CONDITIONS
  CAD FILES PROVIDED BY TRADEPOINT ATLANTIC
  ENTITLED: "BASE - UTILITIES", "BASE - TOPO", "BASE - PLANOMETRICS"
  RECEIVED: 5/27/16
- ARCHITECTURAL PLANS
  PREPARED BY HOFFMANN ASSOCIATES INC.
  ENTITLED: "TRADEPOINT ATLANTIC; MMM MAINTENANCE BUILDING; 1331 POWERHOUSE RD.; BALTIMORE, MD. 21219; BALTIMORE COUNTY"
  JOB NO.:
  DATED: 7/13/22
- PROJECT RAVEN MASS GRADING PLANS
  PREPARED BY BOHLER ENGINEERING
  ENTITLED: "PROJECT RAVEN; FOR TRADEPOINT ATLANTIC; MASS GRADING PLANS"
  JOB NO.: MD16206624
  DATED: 5/26/20; LAST REVISED: 6/10/22
- GEOTECHNICAL REPORT
  PREPARED BY D.W. KOZERA, INC.
  ENTITLED: "GEOTECHNICAL ENGINEERING STUDY; TRADEPOINT ATLANTIC MMM MAINTENANCE BUILDING; SPARROWS POINT, MARYLAND"
  DATED: JUNE 29, 2022

UTILITY CONTACTS

- WATER AND SEWER
  BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS
  111 WEST CHESAPEAKE AVENUE
  TOWSON, MD 21204
  CONTACT: D'ANDREA WALKER
  PHONE: (410) 887-3306
- GAS AND ELECTRIC:
  BGE
  1068 N. FRONT ST. ROOM 401
  BALTIMORE, MD 21202
  PHONE: (410) 850-4620
- CABLE:
  COMCAST BUSINESS SERVICES
  5001 METRO DRIVE
  BALTIMORE, MD 21215
  PHONE: (800) 391-3000
- TELEPHONE
  VERIZON
  99 SHAWAN ROAD
  COCKEYSVILLE, MD 21030
  PHONE: (410) 393-5793
- STORM DRAIN:
  BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS
  111 WEST CHESAPEAKE AVENUE
  TOWSON, MD 21204
  CONTACT: D'ANDREA WALKER
  PHONE: (410) 887-3306

GOVERNING AGENCIES

- BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS
  111 WEST CHESAPEAKE AVENUE
  TOWSON, MD 21204
  CONTACT: D'ANDREA WALKER
  PHONE: (410) 887-3306
- MARYLAND DEPARTMENT OF THE ENVIRONMENT
  1800 WASHINGTON BOULEVARD
  BALTIMORE, MD 21230
  CONTACT: DANIEL LAIRD, P.E.
  PHONE: (410) 537-4311
- BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY
  111 WEST CHESAPEAKE AVENUE, ROOM 319
  TOWSON, MD 21204
  CONTACT: KRITTY UDHIN, P.E.
  PHONE: (410) 887-4488
- BALTIMORE COUNTY DEPARTMENT OF DEVELOPMENT MANAGEMENT
  111 WEST CHESAPEAKE AVENUE
  TOWSON, MD 21204
  CONTACT: LLOYD MOXLEY
  PHONE: (410) 887-3321

ISSUED FOR CONSTRUCTION

SIGNATURE DATE

SIGNATURE DATE

SIGNATURE DATE

THIS DOCUMENT IS NOT ISSUED BY BOHLER FOR CONSTRUCTION WITHOUT (3) SIGNATURES

PROJECT #

REVISION DATE:

SHEET INDEX

SHEET TITLE	SHEET NUMBER
COVER SHEET	C-101 (E&S 1 OF 7)
GENERAL NOTES	C-102
SITE PLAN	C-301
FINAL GRADING PLAN	C-401
UTILITY PLAN	C-501
PHASE I EROSION AND SEDIMENT CONTROL PLAN	C-601 (E&S 2 OF 7)
PHASE I EROSION AND SEDIMENT CONTROL DRAINAGE AREA MAP	C-602 (E&S 3 OF 7)
PHASE II EROSION AND SEDIMENT CONTROL PLAN	C-603 (E&S 4 OF 7)
PHASE II EROSION AND SEDIMENT CONTROL DRAINAGE AREA MAP	C-604 (E&S 5 OF 7)
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS	C-605 - C-606 (E&S 6-7 OF 7)
FINAL LANDSCAPE PLAN	C-701
LANDSCAPE DETAIL SHEET	C-702
STORM DRAIN PROFILES	C-801
SANITARY SEWER PROFILES	C-802
WATERLINE PROFILES	C-803
CONSTRUCTION DETAILS	C-901

OWNER'S/DEVELOPER'S CERTIFICATION:

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THIS CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE ALSO CERTIFY THAT THE SITE WILL BE INSPECTED AT THE END OF EACH WORKING DAY, AND THAT ANY NEEDED MAINTENANCE WILL BE COMPLETED SO AS TO INSURE THAT ALL SEDIMENT CONTROL PRACTICES ARE LEFT IN OPERATIONAL CONDITION. I/WE AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATION BY THE BALTIMORE COUNTY SOIL CONSERVATION DISTRICT BOARD OF SUPERVISORS OR THEIR AUTHORIZED AGENTS

SIGNATURE OWNER/DEVELOPER — DATE

PRINT NAME — TITLE

CONSULTANT'S CERTIFICATION:

I CERTIFY THAT THIS PLAN OF EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BALTIMORE COUNTY SOIL CONSERVATION DISTRICT AND THE CURRENT STATE OF MARYLAND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. I HAVE REVIEWED THIS EROSION AND SEDIMENT CONTROL PLAN WITH THE OWNER/DEVELOPER.

SIGNATURE CONSULTANT — 7/26/22 DATE

RYAN M. STASIOWSKI — 49425

PRINT NAME — MD LICENSE NUMBER

REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105

BY — DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT

E&S 1 OF 7

OWNER/DEVELOPER
TRADEPOINT ATLANTIC, LLC
6995 BETHLEHEM BOULEVARD
SPARROWS POINT, MD 21219
CONTACT: LUKE KLUTTZ
PHONE: 443-909-9617

PREPARED BY

BOHLER

CONTACT: JENNIFER BASS

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT. WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL SERVICES
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY
1	7/20/22	REV. PER CLIENT COMMENTS	DMD / RMS
2	8/11/22	REV. PER CLIENT COMMENTS	DMD / RMS

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ISSUED FOR MUNICIPAL & AGENCY REVIEW & APPROVAL

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	MDA220044.00
DRAWN BY:	DMD
CHECKED BY:	MJG
DATE:	05/16/2022
CAD I.D.:	MDA220044 - CNDS

PROJECT:

CONSTRUCTION DOCUMENTS

FOR

TRADEPOINT ATLANTIC

MMM MAINTENANCE FACILITY

1331 POWERHOUSE ROAD
BALTIMORE, MD 21219
TM 111, GRID 14, PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
JBASS@BOHLERENG.COM

R.M. STASIOWSKI
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 49425
PROFESSIONAL CERTIFICATION
I, RYAN M. STASIOWSKI, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49425, EXPIRATION DATE: 6/9/2024

SHEET TITLE:

COVER SHEET

SHEET NUMBER:

C-101

MDE PROJECT NO. 22-SF-0193

GENERAL NOTES

(Rev. 2/2021)

1. THESE PLANS ARE SOLELY BASED ON INFORMATION THE OWNER AND OTHERS PROVIDED TO BOHLER ENGINEERING, VA, LLC (HEREIN "BOHLER") PRIOR TO THE DATE ON WHICH THE ENGINEER OF RECORD AND BOHLER PREPARED THESE PLANS. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING CONDITIONS AND IMMEDIATELY NOTIFY BOHLER , IN WRITING, IF ANY ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THESE PLANS, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.
2. THE CONTRACTOR MUST STRICTLY COMPLY WITH THESE NOTES AND ALL SPECIFICATIONS/REPORTS CONTAINED HEREIN. THE CONTRACTOR MUST ENSURE THAT ALL SUBCONTRACTORS FULLY AND COMPLETELY CONFORM TO AND COMPLY WITH THESE REQUIREMENTS, THESE NOTES, AND THE REQUIREMENTS ARTICULATED IN THE NOTES CONTAINED IN ALL THE OTHER DRAWINGS THAT COMPRISE THE PLAN SET OF DRAWINGS. ADDITIONAL NOTES AND SPECIFIC PLAN NOTES MAY BE FOUND ON THE INDIVIDUAL PLANS. THESE GENERAL NOTES APPLY TO THIS ENTIRE DOCUMENT PACKAGE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL CONSTRUCTION CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE, PRIOR TO THE INITIATION AND COMMENCEMENT OF CONSTRUCTION.
3. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST CONFIRM WITH THE ENGINEER OF RECORD AND BOHLER THAT THE LATEST EDITION OF THE DOCUMENTS AND/OR REPORTS REFERENCED WITHIN THE PLAN REFERENCES ARE BEING USED FOR CONSTRUCTION. THIS IS THE CONTRACTOR'S SOLE AND COMPLETE RESPONSIBILITY.
4. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION IS TO BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED THE CONDITIONS OF APPROVAL TO ALL PLANS AND OTHER DOCUMENTS REVIEWED AND APPROVED BY THE PERMITTING AUTHORITIES AND HAS ALSO CONFIRMED THAT ALL NECESSARY AND REQUIRED PERMITS HAVE BEEN OBTAINED. THE CONTRACTOR MUST HAVE COPIES OF ALL PERMITS AND APPROVALS ON SITE AT ALL TIMES.
5. THE CONTRACTOR MUST ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS/REPORTS AND CONDITIONS OF APPROVAL, AND ALL APPLICABLE REQUIREMENTS, RULES, REGULATIONS, STATUTORY REQUIREMENTS, CODES, LAWS AND STANDARDS OF ALL GOVERNMENTAL ENTITIES WITH JURISDICTION OVER THIS PROJECT, AND ALL PROVISIONS IN AND CONDITIONS OF THE CONSTRUCTION CONTRACT WITH THE OWNER/DEVELOPER INCLUDING ALL EXHIBITS, ATTACHMENTS AND ADDENDA TO SAME.
6. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST COORDINATE THE BUILDING LAYOUT BY CAREFULLY REVIEWING THE MOST CURRENT ARCHITECTURAL, CIVIL AND STRUCTURAL CONSTRUCTION DOCUMENTS (INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESSION PLANS, WHERE APPLICABLE). THE CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER, ARCHITECT AND ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY CONFLICTS, DISCREPANCIES OR AMBIGUITIES WHICH EXIST BETWEEN THESE PLANS AND ANY OTHER PLANS THAT COMPRISE THE CONSTRUCTION DOCUMENTS.
7. CONTRACTOR MUST REFER TO AND ENSURE COMPLIANCE WITH THE APPROVED ARCHITECTURAL/BUILDING PLANS OF RECORD FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY LOCATIONS.
8. THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS AND MEASUREMENTS SHOWN ON THESE PLANS, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR MUST IMMEDIATELY NOTIFY ENGINEER OF RECORD AND BOHLER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR WORK WHICH HAS TO BE RE-DONE OR REPAIRED DUE TO DIMENSIONS, MEASUREMENTS OR GRADES SHOWN INCORRECTLY ON THESE PLANS PRIOR TO BOTH (A) THE CONTRACTOR GIVING ENGINEER OF RECORD AND BOHLER WRITTEN NOTIFICATION OF SAME AND (B) ENGINEER OF RECORD AND BOHLER, THEREAFTER, PROVIDING THE CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH ADDITIONAL WORK.
9. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND MEASUREMENTS INCLUDED ON DESIGN DOCUMENTS HEREIN AND MUST NOT SCALE OFF THE DRAWINGS DUE TO POTENTIAL PRINTING INACCURACIES. ALL DIMENSIONS AND MEASUREMENTS ARE TO BE CHECKED AND CONFIRMED BY THE GENERAL CONTRACTOR PRIOR TO PREPARATION OF SHOP DRAWINGS, FABRICATION/ORDERING OF PARTS AND MATERIALS AND COMMENCEMENT OF SITE WORK. SITE PLAN DRAWINGS ARE NOT INTENDED AS SURVEY DOCUMENTS. DIMENSIONS SUPERSEDE GRAPHICAL REPRESENTATIONS. THE CONTRACTOR MUST MAKE CONTRACTOR'S OWN MEASUREMENTS FOR LAYOUT OF IMPROVEMENTS.
10. THE OWNER AND CONTRACTOR MUST BE FAMILIAR WITH AND RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS REQUIRED FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
11. WHEN INCLUDED AS ONE OF THE REFERENCED DOCUMENTS, THE GEOTECHNICAL REPORT, SPECIFICATIONS AND RECOMMENDATIONS SET FORTH THEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND, IN CASE OF CONFLICT, DISCREPANCY OR AMBIGUITY, THE MORE STRINGENT REQUIREMENTS AND/OR RECOMMENDATIONS CONTAINED IN: (A) THE PLANS; AND (B) THE GEOTECHNICAL REPORT AND RECOMMENDATIONS, MUST TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR MUST NOTIFY THE ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY SUCH CONFLICT, DISCREPANCY OR AMBIGUITY BETWEEN THE GEOTECHNICAL REPORT AND PLANS AND SPECIFICATIONS, PRIOR TO PROCEEDING WITH ANY FURTHER WORK. IF A GEOTECHNICAL REPORT WAS NOT CREATED, THEN THE CONTRACTOR MUST FOLLOW AND COMPLY WITH ALL OF THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE SPECIFICATIONS WHICH HAVE JURISDICTION OVER THIS PROJECT.
12. ENGINEER OF RECORD AND BOHLER ARE NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, HAS NO LIABILITY FOR ANY HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES, OR POLLUTANTS ON, ABOUT OR UNDER THE PROPERTY.
13. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN AND WHERE SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES. ALL OF THIS WORK IS TO BE PERFORMED AT CONTRACTOR'S SOLE COST AND EXPENSE.
14. THE CONTRACTOR MUST EXERCISE EXTREME CAUTION WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. WHICH ARE TO REMAIN EITHER FOR AN INITIAL PHASE OF THE PROJECT OR AS PART OF THE FINAL CONDITION. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ALL APPROPRIATE MEASURES REQUIRED TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT, UTILITIES, BUILDINGS, AND INFRASTRUCTURE WHICH ARE TO REMAIN, AND TO PROVIDE A SAFE WORK AREA FOR THIRD PARTIES, PEDESTRIANS AND ANYONE INVOLVED WITH THE PROJECT.
15. DEBRIS MUST NOT BE BURIED ON THE SUBJECT SITE. ALL DEMOLITION AND CONSTRUCTION WASTES, UNSUITABLE EXCAVATED MATERIAL, EXCESS SOIL AND DEBRIS (SOLID WASTE) MUST BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE CODES WHICH HAVE JURISDICTION OVER THIS PROJECT OR OVER THE CONTRACTOR.
16. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAINTAIN RECORDS TO DEMONSTRATE PROPER AND FULLY COMPLIANT DISPOSAL ACTIVITIES, TO BE PROMPTLY PROVIDED TO THE OWNER UPON REQUEST.
17. THE CONTRACTOR MUST REPAIR, AT CONTRACTOR'S SOLE COST, ALL DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY DURING THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME TO INCLUDE, BUT NOT BE LIMITED TO, REDESIGN, RE-SURVEY, RE-PERMITTING AND CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST REPLACE ALL SIGNAL INTERCONNECTION CABLE, WIRING CONDUITS, AND ANY UNDERGROUND ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE REPAIR OF ANY SUCH NEW OR EXISTING CONSTRUCTION OR PROPERTY MUST RESTORE SUCH CONSTRUCTION OR PROPERTY TO A CONDITION EQUIVALENT TO OR BETTER THAN THE CONDITIONS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION, AND IN CONFORMANCE WITH APPLICABLE CODES, LAWS, RULES, REGULATIONS, STATUTORY REQUIREMENTS AND STATUTES. THE CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE CONTRACTOR MUST, PROMPTLY, DOCUMENT ALL EXISTING DAMAGE AND NOTIFY, IN WRITING, THE OWNER AND THE CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.
18. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR AND HAVE NO CONTRACTUAL, LEGAL OR OTHER RESPONSIBILITIES FOR JOB SITE SAFETY JOB SITE SUPERVISION, OR ANYTHING RELATED TO SAME. THE ENGINEER OF RECORD AND BOHLER HAVE NOT BEEN RETAINED TO PERFORM OR TO BE RESPONSIBLE FOR JOB SITE SAFETY, SAME BEING WHOLLY OUTSIDE OF ENGINEER OF RECORD'S AND BOHLER SERVICES AS RELATED TO THE PROJECT. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE TO IDENTIFY OR REPORT ANY JOB SITE SAFETY ISSUES OR ANY JOB SITE CONDITIONS, AT ANY TIME.
19. THE CONTRACTOR MUST IMMEDIATELY IDENTIFY IN WRITING, TO THE ENGINEER OF RECORD AND BOHLER , ANY DISCREPANCIES THAT MAY OR COULD AFFECT THE PUBLIC SAFETY, HEALTH OR GENERAL WELFARE, OR PROJECT COST. IF THE CONTRACTOR PROCEEDS WITH CONSTRUCTION WITHOUT PROVIDING PROPER WRITTEN NOTIFICATION AS DESCRIBED ABOVE, IT WILL BE AT THE CONTRACTOR'S OWN RISK AND, FURTHER, THE CONTRACTOR MUST INDEMNIFY, DEFEND AND HOLD HARMLESS THE ENGINEER OF RECORD AND BOHLER FOR ANY AND ALL DAMAGES, COSTS, INJURIES, ATTORNEY'S FEES AND THE LIKE WHICH RESULT FROM OR ARE IN ANY WAY RELATED TO SAME INCLUDING, BUT NOT LIMITED TO, ANY THIRD PARTY AND FIRST PARTY CLAIMS.
20. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY INJURY OR DAMAGES RESULTING FROM THE CONTRACTOR'S FAILURE TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH THE APPROVED PLANS, AND CURRENT CODES, RULES, STATUTES AND THE LIKE. IF THE CONTRACTOR AND/OR OWNER FAIL TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH APPROVED PLANS, RULES, STATUTES, CODES AND THE LIKE, THE CONTRACTOR AND/OR OWNER AGREE TO AND MUST JOINTLY, INDEPENDENTLY, SEPARATELY, AND SEVERALLY INDEMNIFY AND HOLD THE ENGINEER OF RECORD AND BOHLER HARMLESS FOR AND FROM ALL INJURIES, CLAIMS AND DAMAGES THAT ENGINEER AND BOHLER SUFFER AND ANY AND ALL COSTS THAT ENGINEER AND BOHLER INCUR AS RELATED TO SAME.
21. ALL CONTRACTORS MUST CARRY AT LEAST THE MINIMUM AMOUNT OF THE SPECIFIED AND COMMERCIALLY REASONABLE STATUTORY WORKER'S COMPENSATION INSURANCE, EMPLOYER'S LIABILITY INSURANCE AND COMMERCIAL GENERAL LIABILITY INSURANCE (CGL) INCLUDING ALSO ALL UMBRELLA COVERAGES. ALL CONTRACTORS MUST HAVE THEIR CGL POLICIES ENDORSED TO NAME BOHLER , AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AS ADDITIONAL NAMED INSUREDS AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE (DEFEND, IF APPLICABLE) AND HOLD HARMLESS AND INDEMNITY OBLIGATIONS ASSUMED AND AGREED TO BY THE CONTRACTOR HEREIN. ALL CONTRACTORS MUST FURNISH BOHLER WITH CERTIFICATIONS OF INSURANCE OR CERTIFICATES OF INSURANCE AS EVIDENCE OF THE REQUIRED INSURANCE COVERAGES PRIOR TO COMMENCING ANY WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION AND FOR TWO YEARS AFTER THE COMPLETION OF CONSTRUCTION AND AFTER ALL PERMITS ARE ISSUED, WHICHEVER DATE IS LATER. IN ADDITION, ALL CONTRACTORS AGREE THAT THEY WILL, TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, INDEMNIFY, DEFEND AND HOLD HARMLESS BOHLER AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS FROM AND AGAINST ANY DAMAGES, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, INCLUDING, BUT NOT LIMITED TO, REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR TO THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTOR(S), ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE HEREUNDER.
22. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES, GENERALLY OR FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PROCEDURES FOR COMPLETION OF THE WORK DEPICTED BOTH ON THESE PLANS, AND FOR ANY CONFLICTS IN SCOPE AND REVISIONS THAT RESULT FROM SAME. THE CONTRACTOR IS FULLY AND SOLELY RESPONSIBLE FOR DETERMINING THE MEANS AND METHODS FOR COMPLETION OF THE WORK, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
23. NEITHER THE PROFESSIONAL ACTIVITIES OF BOHLER, NOR THE PRESENCE OF BOHLER AND/OR ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE (HEREIN "BOHLER PARTIES"), RELIEVES OR WILL RELIEVE THE CONTRACTOR OF AND FROM CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, OVERSEEING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE WITH ALL HEALTH AND SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES WITH JURISDICTION OVER THE PROJECT AND/OR PROPERTY. BOHLER PARTIES HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER (OR ANY RESPONSIBILITY FOR) ANY CONSTRUCTION, THE CONTRACTOR OR ITS EMPLOYEES RELATING TO THEIR WORK AND ANY AND ALL HEALTH AND SAFETY PROGRAMS OR PROCEDURES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR MUST INDEMNIFY, DEFEND, PROTECT AND HOLD HARMLESS BOHLER PARTIES FOR AND FROM ANY LIABILITY TO BOHLER PARTIES RESULTING FROM THE CONTRACTOR'S WORK, SERVICES AND/OR VIOLATIONS OF THIS NOTE, THESE NOTES OR ANY NOTES IN THE PLAN SET AND, FURTHER, THE CONTRACTOR MUST NAME BOHLER AS AN ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE AS DESCRIBED ABOVE.
24. WHEN IT IS CLEARLY AND SPECIFICALLY WITHIN BOHLER'S SCOPE OF SERVICES CONTRACT WITH THE OWNER/DEVELOPER, BOHLER WILL REVIEW OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF EVALUATING CONFORMANCE WITH THE DESIGN INTENT AND THE INFORMATION SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND METHODS AND/OR TECHNIQUES OR PROCEDURES, COORDINATION OF THE WORK WITH OTHER TRADES, AND CONSTRUCTION SAFETY PRECAUTIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND BOHLER HAS NO RESPONSIBILITY OR LIABILITY FOR SAME. BOHLER WILL PERFORM ITS SHOP DRAWING REVIEW WITH REASONABLE PROMPTNESS, AS CONDITIONS PERMIT. ANY DOCUMENT, DOCUMENTING BOHLER'S REVIEW OF A SPECIFIC ITEM OR LIMITED SCOPE, MUST NOT INDICATE THAT BOHLER HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. BOHLER IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR MUST, IN WRITING, PROMPTLY AND IMMEDIATELY BRING ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS TO BOHLER'S ATTENTION. BOHLER IS NOT REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.
25. IF THE CONTRACTOR DEVIATES FROM THESE PLANS AND/OR SPECIFICATIONS, INCLUDING THE NOTES CONTAINED HEREIN, WITHOUT FIRST OBTAINING THE PRIOR WRITTEN AUTHORIZATION OF THE ENGINEER OF RECORD AND BOHLER FOR ALL DEVIATIONS WITHIN ENGINEER'S SCOPE, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK PERFORMED WHICH DEVIATES FROM THE PLANS, ALL FINES AND/OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM AND, FURTHER, MUST DEFEND, INDEMNIFY, PROTECT, AND HOLD HARMLESS THE ENGINEER OF RECORD AND BOHLER PARTIES TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, FOR AND FROM ALL FEES, ATTORNEYS' FEES, DAMAGES, COSTS, JUDGMENTS, CLAIMS, INJURIES, PENALTIES AND THE LIKE RELATED TO SAME.
26. THE CONTRACTOR IS RESPONSIBLE FOR A MAINTAINING AND PROTECTING THE TRAFFIC CONTROL PLAN AND ELEMENTS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS, FOR ALL WORK THAT AFFECTS PUBLIC TRAVEL EITHER IN THE RIGHT OF WAY OR ON SITE. THE COST FOR THIS ITEM MUST BE INCLUDED IN THE CONTRACTOR'S PRICE AND IS THE CONTRACTOR'S SOLE RESPONSIBILITY.
27. OWNER MUST MAINTAIN AND PRESERVE ALL PHYSICAL SITE FEATURES AND DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS IN STRICT ACCORDANCE WITH THE APPROVED PLAN(S) AND DESIGN; AND, FURTHER, THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY FAILURE TO SO MAINTAIN OR PRESERVE SITE AND/OR DESIGN FEATURES. IF OWNER FAILS TO MAINTAIN AND/OR PRESERVE ALL PHYSICAL SITE FEATURES AND/OR DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS, OWNER AGREES TO INDEMNIFY AND HOLD THE ENGINEER OF RECORD AND BOHLER PARTIES, HARMLESS FOR ALL INJURIES, DAMAGES AND COSTS THAT ENGINEER OF RECORD AND BOHLER INCUR AS A RESULT OF SAID FAILURE OR FAILURE TO PRESERVE.
28. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION ACTIVITIES AND MATERIALS COMPLY WITH AND CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL RULES AND REGULATIONS, LAWS, ORDINANCES, AND CODES, AND ALL APPLICABLE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, (29 U.S.C. 651 ET SEQ.) AS AMENDED, AND ANY MODIFICATIONS, AMENDMENTS OR REVISIONS TO SAME.
29. THE CONTRACTOR MUST STRICTLY COMPLY WITH THE LATEST AND CURRENT OSHA STANDARDS AND REGULATIONS, AND/OR ANY OTHER AGENCY WITH JURISDICTION OVER EXCAVATION AND TRENCHING PROCEDURES. ENGINEER OF RECORD AND BOHLER HAS NO RESPONSIBILITY FOR OR AS RELATED TO EXCAVATION AND TRENCHING PROCEDURES AND WORK.
30. THE CONTRACTOR AND THE OWNER MUST INSTALL ALL ELEMENTS AND COMPONENTS IN STRICT COMPLIANCE WITH AND IN ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDED INSTALLATION CRITERIA AND SPECIFICATIONS. IF THE CONTRACTOR AND/OR OWNER FAIL TO DO SO, THEY AGREE TO JOINTLY, INDEPENDENTLY, SEPARATELY, COLLECTIVELY, AND SEVERALLY INDEMNIFY, DEFEND, PROTECT AND HOLD ENGINEER OF RECORD AND BOHLER PARTIES HARMLESS FOR ALL INJURIES AND DAMAGES THAT ENGINEER SUFFERS AND COSTS THAT ENGINEER INCURS AS A RESULT OF SAID FAILURE.
31. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN AN ON-SITE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN COMPLIANCE WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS OR LOCAL GOVERNING AGENCY FOR SITES WHERE ONE (1) ACRE OR MORE IS DISTURBED BY CONSTRUCTION ACTIVITIES (UNLESS THE LOCAL JURISDICTION REQUIRES A DIFFERENT THRESHOLD). THE CONTRACTOR MUST ENSURE THAT ALL ACTIVITIES, INCLUDING THOSE OF ALL SUBCONTRACTORS, ARE IN COMPLIANCE WITH THE SWPPP, INCLUDING BUT NOT LIMITED TO LOGGING ACTIVITIES (MINIMUM ONCE PER WEEK AND AFTER RAINFALL EVENTS) AND CORRECTIVE MEASURES, AS APPROPRIATE AND FURTHER, THE CONTRACTOR IS SOLELY AND COMPLETELY RESPONSIBLE FOR FAILING TO DO SO.
32. AS CONTAINED IN THESE DRAWINGS AND ASSOCIATED DOCUMENTS PREPARED BY THE ENGINEER OF RECORD AND BOHLER, THE USE OF THE WORDS 'CERTIFY' OR 'CERTIFICATION' CONSTITUTE(S) AN EXPRESSION ONLY OF PROFESSIONAL OPINION REGARDING THE INFORMATION WHICH IS THE SUBJECT OF THE ENGINEER OF RECORD'S AND BOHLER KNOWLEDGE OR BELIEF AND IN ACCORDANCE WITH COMMON AND ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE OF ANY NATURE OR TYPE, EITHER EXPRESSED OR IMPLIED, UNDER ANY CIRCUMSTANCES.

DEMOLITION NOTES

(Rev. 2/2021)

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. THE CONTRACTOR MUST CONDUCT DEMOLITION/REMOVALS ACTIVITIES IN SUCH A MANNER AS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, WALKWAYS, AND ALL OTHER ADJACENT FACILITIES. THE CONTRACTOR MUST OBTAIN ALL APPLICABLE PERMITS FROM THE APPROPRIATE GOVERNMENTAL AUTHORITY(IES) PRIOR TO THE COMMENCEMENT OF ANY ROAD OPENING OR DEMOLITION ACTIVITIES IN OR ADJACENT TO THE RIGHT-OF-WAY.
3. WHEN DEMOLITION-RELATED ACTIVITIES IMPACT ROADWAYS AND/OR ROADWAY RIGHT-OF-WAY, THE CONTRACTOR MUST PROVIDE TRAFFIC CONTROL AND GENERALLY ACCEPTED SAFE PRACTICES IN CONFORMANCE WITH THE CURRENT FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), AND THE FEDERAL, STATE, AND LOCAL REGULATIONS.
4. THE DEMOLITION (AND/OR REMOVALS) PLAN IS INTENDED TO PROVIDE GENERAL INFORMATION AND TO IDENTIFY ONLY CONDITIONS REGARDING ITEMS TO BE DEMOLISHED, REMOVED, AND/OR TO REMAIN.
   A. THE CONTRACTOR MUST ALSO REVIEW ALL CONSTRUCTION DOCUMENTS AND INCLUDE WITHIN THE DEMOLITION ACTIVITIES ALL INCIDENTAL WORK NECESSARY FOR THE CONSTRUCTION OF THE NEW SITE IMPROVEMENTS.
   B. THIS PLAN IS NOT INTENDED TO AND DOES NOT PROVIDE DIRECTION REGARDING THE MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE EMPLOYED TO ACCOMPLISH THE WORK. ALL MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE USED MUST BE IN STRICT ACCORDANCE AND CONFORMANCE WITH ALL STATE, FEDERAL, LOCAL, AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR MUST COMPLY WITH ALL OSHA AND OTHER SAFETY PRECAUTIONS NECESSARY TO PROVIDE A SAFE WORK SITE FOR THE CONTRACTOR AND THE PUBLIC.
5. THE CONTRACTOR MUST PROVIDE ALL "METHODS AND MEANS" NECESSARY TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF EXISTING STRUCTURES, AND ANY OTHER IMPROVEMENTS THAT ARE REMAINING ON OR OFF SITE. THE CONTRACTOR, AT THE CONTRACTOR'S SOLE COST, MUST REPAIR ALL DAMAGE TO ALL ITEMS AND FEATURES THAT ARE TO REMAIN. CONTRACTOR MUST USE NEW MATERIAL FOR ALL REPAIRS. CONTRACTOR'S REPAIRS MUST INCLUDE THE RESTORATION OF ALL ITEMS AND FEATURES REPAIRED TO THEIR PRE-DEMOLITION CONDITION, OR BETTER. CONTRACTOR MUST PERFORM ALL REPAIRS AT THE CONTRACTOR'S SOLE EXPENSE.
6. ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION. THE CONTRACTOR MUST PROCEED WITH THE DEMOLITION IN A SYSTEMATIC AND SAFE MANNER, COMPLYING WITH ALL OSHA REQUIREMENTS, TO ENSURE PUBLIC AND CONTRACTOR SAFETY AND SAFETY TO ALL PROPERTY ON THE SITE OR ADJACENT OR NEAR TO THE SAME.
7. THE CONTRACTOR IS RESPONSIBLE FOR JOB SITE SAFETY, WHICH MUST INCLUDE, BUT IS NOT LIMITED TO, THE INSTALLATION AND MAINTENANCE OF BARRIERS, FENCING, OTHER APPROPRIATE AND/OR NECESSARY SAFETY FEATURES AND ITEMS NECESSARY TO PROTECT THE PUBLIC FROM AREAS OF CONSTRUCTION AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR MUST SAFEGUARD THE SITE AS NECESSARY TO PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE ENTRY OF ALL UNAUTHORIZED PERSONS AT ANY TIME, TO OR NEAR THE DEMOLITION AREA.
8. PRIOR TO THE COMMENCEMENT OF ANY SITE ACTIVITY AND ANY DEMOLITION ACTIVITY, THE CONTRACTOR MUST, IN WRITING, RAISE ANY QUESTIONS CONCERNING THE ACCURACY OR INTENT OF THESE PLANS AND/OR SPECIFICATIONS, ALL CONCERNS OR QUESTIONS REGARDING THE APPLICABLE SAFETY STANDARDS, AND/OR THE SAFETY OF THE CONTRACTOR AND/OR THIRD PARTIES IN PERFORMING THE WORK ON THIS PROJECT. ANY SUCH CONCERNS MUST BE CONVEYED TO THE ENGINEER OF RECORD AND BOHLER , IN WRITING AND MUST ADDRESS ALL ISSUES AND ITEMS RESPONDED TO, BY THE ENGINEER OF RECORD AND BY BOHLER, IN WRITING. ALL DEMOLITION ACTIVITIES MUST BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS AND SPECIFICATIONS AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, RULES, REQUIREMENTS, STATUTES, ORDINANCES AND CODES.
9. THE CONTRACTOR MUST BECOME FAMILIAR WITH THE APPLICABLE UTILITY SERVICE PROVIDER REQUIREMENTS AND IS RESPONSIBLE FOR ALL COORDINATION REGARDING UTILITY DEMOLITION AND/OR DISCONNECTION AS IDENTIFIED OR REQUIRED FOR THE PROJECT. THE CONTRACTOR MUST PROVIDE THE OWNER WITH WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED, REMOVED AND/OR ABANDONED IN ACCORDANCE WITH THE JURISDICTION AND UTILITY COMPANY REQUIREMENTS AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.
10. PRIOR TO COMMENCING ANY DEMOLITION, THE CONTRACTOR MUST:
    A. OBTAIN ALL REQUIRED PERMITS AND MAINTAIN THE SAME ON SITE FOR REVIEW BY THE ENGINEER AND ALL PUBLIC AGENCIES WITH JURISDICTION THROUGHOUT THE DURATION OF THE PROJECT, SITE WORK, AND DEMOLITION WORK.
    B. NOTIFY, AT A MINIMUM, THE MUNICIPAL ENGINEER, DESIGN ENGINEER, AND LOCAL SOIL CONSERVATION JURISDICTION, AT LEAST 72 BUSINESS HOURS PRIOR TO THE COMMENCEMENT OF WORK.
    C. INSTALL THE REQUIRED SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO SITE DISTURBANCE, AND MAINTAIN SAID CONTROLS UNTIL SITE IS STABILIZED
    D. IN ACCORDANCE WITH STATE LAW, THE CONTRACTOR MUST CALL THE STATE ONE-CALL DAMAGE PROTECTION SYSTEM FOR UTILITY MARK OUT, IN ADVANCE OF ANY EXCAVATION.
    E. LOCATE AND PROTECT ALL UTILITIES AND SERVICES, INCLUDING BUT NOT LIMITED TO GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN AND ADJACENT TO THE LIMITS OF PROJECT ACTIVITIES. THE CONTRACTOR MUST USE AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL UNDERGROUND UTILITIES.
    F. PROTECT AND MAINTAIN IN OPERATION, ALL ACTIVE UTILITIES AND SYSTEMS THAT ARE NOT BEING REMOVED DURING ANY DEMOLITION ACTIVITIES.
    G. ARRANGE FOR AND COORDINATE WITH THE APPLICABLE UTILITY SERVICE PROVIDER(S) FOR THE TEMPORARY OR PERMANENT TERMINATION OF SERVICE REQUIRED BY THE PROJECT PLANS AND SPECIFICATIONS REGARDING THE METHODS AND MEANS TO CONSTRUCT SAME. THESE ARE NOT THE ENGINEER OF RECORD'S RESPONSIBILITY. IN THE EVENT OF ABANDONMENT, THE CONTRACTOR MUST PROVIDE THE UTILITY ENGINEER AND OWNER WITH IMMEDIATE WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH JURISDICTIONAL AND UTILITY COMPANY REQUIREMENTS.
    H. ARRANGE FOR AND COORDINATE WITH THE APPLICABLE UTILITY SERVICE PROVIDER(S) REGARDING WORKING "OFF-PEAK" HOURS OR ON WEEKENDS AS NECESSARY OR AS REQUIRED TO MINIMIZE THE IMPACT ON, OF, AND TO THE AFFECTED PARTIES. WORK REQUIRED TO BE PERFORMED "OFF-PEAK" IS TO BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
    I. IN THE EVENT THE CONTRACTOR DISCOVERS ANY HAZARDOUS MATERIAL, THE REMOVAL OF WHICH IS NOT ADDRESSED IN THE PROJECT PLANS AND SPECIFICATIONS OR THE CONTRACT WITH THE OWNER/DEVELOPER, THE CONTRACTOR MUST IMMEDIATELY CEASE ALL WORK IN THE AREA OF DISCOVERY, AND IMMEDIATELY NOTIFY, IN WRITING AND VERBALLY, THE OWNER AND ENGINEER OF RECORD AND BOHLER, THE DISCOVERY OF SUCH MATERIALS TO PURSUE PROPER AND COMPLIANT REMOVAL OF SAME.
11. THE CONTRACTOR MUST NOT PERFORM ANY EARTH MOVEMENT ACTIVITIES, DEMOLITION OR REMOVAL OF FOUNDATION WALLS, FOOTINGS, OR OTHER MATERIALS WITHIN THE LIMITS OF DISTURBANCE, UNLESS SAME IS IN STRICT ACCORDANCE AND CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS, OR PURSUANT TO THE WRITTEN DIRECTION OF THE OWNER'S STRUCTURAL OR GEOTECHNICAL ENGINEER.
12. DEMOLITION ACTIVITIES AND EQUIPMENT MUST NOT USE OR INCLUDE AREAS OUTSIDE THE DEFINED PROJECT LIMIT LINE, WITHOUT SPECIFIC WRITTEN PERMISSION AND AUTHORITY OF AND FROM THE OWNER AND ALL GOVERNMENTAL AGENCIES WITH JURISDICTION.
13. THE CONTRACTOR MUST BACKFILL ALL EXCAVATION RESULTING FROM, OR INCIDENTAL TO, DEMOLITION ACTIVITIES. BACKFILL MUST BE ACCOMPLISHED WITH APPROVED BACKFILL MATERIALS AND MUST BE SUFFICIENTLY COMPACTED TO SUPPORT ALL NEW IMPROVEMENTS AND MUST BE PERFORMED IN COMPLIANCE WITH THE RECOMMENDATIONS AND GUIDANCE ARTICULATED IN THE GEOTECHNICAL REPORT. BACKFILLING MUST OCCUR IMMEDIATELY AFTER DEMOLITION ACTIVITIES AND MUST BE PERFORMED SO AS TO PREVENT WATER ENTERING THE EXCAVATION. FINISHED SURFACES MUST BE GRADED TO PROMOTE POSITIVE DRAINAGE. THE CONTRACTOR IS RESPONSIBLE FOR COMPACTION TESTING AND MUST SUBMIT SUCH REPORTS AND RESULTS TO THE ENGINEER OF RECORD AND THE OWNER.
14. EXPLOSIVES MUST NOT BE USED WITHOUT PRIOR WRITTEN CONSENT FROM BOTH THE OWNER AND ALL APPLICABLE, NECESSARY AND REQUIRED GOVERNMENTAL AUTHORITIES. PRIOR TO COMMENCING ANY EXPLOSIVE PROGRAM AND/OR ANY DEMOLITION ACTIVITIES, THE CONTRACTOR MUST ENSURE AND OVERSEE THE INSTALLATION OF ALL OF THE REQUIRED PERMIT AND EXPLOSIVE CONTROL MEASURES THAT THE FEDERAL, STATE, AND LOCAL GOVERNMENTS REQUIRE. THE CONTRACTOR IS ALSO RESPONSIBLE TO CONDUCT AND PERFORM ALL INSPECTION AND SEISMIC VIBRATION TESTING THAT IS REQUIRED TO MONITOR THE EFFECTS ON ALL LOCAL STRUCTURES AND THE LIKE.
15. IN ACCORDANCE WITH FEDERAL, STATE, AND/OR LOCAL STANDARDS, THE CONTRACTOR MUST USE DUST CONTROL MEASURES TO LIMIT AIRBORNE DUST AND DIRT RISING AND SCATTERING IN THE AIR. AFTER THE DEMOLITION IS COMPLETE, THE CONTRACTOR MUST CLEAN ALL ADJACENT STRUCTURES AND IMPROVEMENTS TO REMOVE ALL DUST AND DEBRIS WHICH THE DEMOLITION OPERATIONS CAUSE. THE CONTRACTOR IS RESPONSIBLE FOR RETURNING ALL ADJACENT AREAS TO THEIR "PRE-DEMOLITION" CONDITION AT CONTRACTOR'S SOLE COST.
16. PAVEMENT MUST BE SAW CUT IN STRAIGHT LINES. ALL DEBRIS FROM REMOVAL OPERATIONS MUST BE REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. STOCKPILING OF DEBRIS OUTSIDE OF APPROVED AREAS WILL NOT BE PERMITTED, INCLUDING BUT NOT LIMITED TO, THE PUBLIC RIGHT-OF-WAY.
17. THE CONTRACTOR MUST MAINTAIN A RECORD SET OF PLANS WHICH INDICATES THE LOCATION OF EXISTING UTILITIES THAT ARE CAPPED, ABANDONED IN PLACE, OR RELOCATED DUE TO DEMOLITION ACTIVITIES. THIS RECORD DOCUMENT MUST BE PREPARED IN A NEAT AND WORKMAN-LIKE MANNER AND TURNED OVER TO THE OWNER/DEVELOPER UPON COMPLETION OF THE WORK, ALL OF WHICH IS AT THE CONTRACTOR'S SOLE COST.
18. THE CONTRACTOR MUST EMPTY, CLEAN AND REMOVE FROM THE SITE ALL UNDERGROUND STORAGE TANKS, IF ENCOUNTERED, IN ACCORDANCE WITH FEDERAL, STATE, COUNTY AND LOCAL REQUIREMENTS, PRIOR TO CONTINUING CONSTRUCTION IN THE AREA AROUND THE TANK WHICH EMPTYING, CLEANING AND REMOVAL ARE AT THE CONTRACTOR'S SOLE COST.

SITE LAYOUT NOTES

(Rev. 1/2020)

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. PRIOR TO THE COMMENCEMENT OF GENERAL CONSTRUCTION, THE CONTRACTOR MUST INSTALL SOIL EROSION CONTROL AND ANY STORMWATER POLLUTION PREVENTION PLAN (SWPPP) MEASURES NECESSARY, AS INDICATED ON THE APPROVED SOIL EROSION AND SEDIMENT CONTROL PLAN AND IN ACCORDANCE WITH APPLICABLE AND/OR APPROPRIATE AGENCIES' GUIDELINES TO PREVENT SEDIMENT AND/OR LOOSE DEBRIS FROM WASHING ONTO ADJACENT PROPERTIES OR THE RIGHT OF WAY.
3. ALL DIRECTIONAL/TRAFFIC SIGNING AND PAVEMENT STRIPING MUST CONFORM TO THE LATEST STANDARDS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND ANY APPLICABLE STATE OR LOCALLY APPROVED SUPPLEMENTS, GUIDELINES, RULES, REGULATIONS, STANDARDS AND THE LIKE.
4. THE LOCATIONS OF PROPOSED UTILITY POLES AND TRAFFIC SIGNS SHOWN ON THE PLANS ARE SCHEMATIC AND PRELIMINARY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR FIELD-VERIFYING THEIR LOCATION. THE CONTRACTOR MUST COORDINATE THE RELOCATION OF TRAFFIC SIGNS WITH THE ENTITY WITH JURISDICTION OVER THE PROJECT.
5. ALL DIMENSIONS SHOWN ARE TO BOTTOM FACE OF CURB, EDGE OF PAVEMENT, OR EDGE OF BUILDING, EXCEPT WHEN DIMENSION IS TO A PROPERTY LINE, STAKE OUT OF LOCATIONS OF INLETS, LIGHT POLES, ETC. MUST BE PERFORMED IN STRICT ACCORDANCE WITH THE DETAILS, UNLESS NOTED CLEARLY OTHERWISE.

GRADING NOTES

(Rev. 2/2021)

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. SITE GRADING MUST BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AS REFERENCED IN THIS PLAN SET. IF NO GEOTECHNICAL REPORT HAS BEEN REFERENCED, THE CONTRACTOR MUST HAVE A GEOTECHNICAL ENGINEER PROVIDE WRITTEN SPECIFICATIONS AND RECOMMENDATIONS PRIOR TO THE CONTRACTOR COMMENCING THE GRADING WORK. THE CONTRACTOR MUST FOLLOW THE REQUIREMENTS OF ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS, WHICH HAVE JURISDICTION OVER THIS PROJECT.
3. THE CONTRACTOR IS REQUIRED TO SECURE ALL NECESSARY AND/OR REQUIRED PERMITS AND APPROVALS FOR ALL OFF-SITE MATERIAL SOURCES AND DISPOSAL FACILITIES. THE CONTRACTOR MUST SUPPLY A COPY OF APPROVALS TO THE ENGINEER OF RECORD AND THE OWNER PRIOR TO THE CONTRACTOR COMMENCING ANY WORK.
4. THE CONTRACTOR IS FULLY RESPONSIBLE FOR VERIFYING EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCING ANY CONSTRUCTION. SHOULD DISCREPANCIES BETWEEN THE PLANS AND INFORMATION OBTAINED THROUGH FIELD VERIFICATIONS BE IDENTIFIED OR EXIST, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING.
5. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING ALL UNSUITABLE MATERIALS WITH SUITABLE MATERIALS AS SPECIFIED IN THE GEOTECHNICAL REPORT. THE CONTRACTOR MUST COMPACT ALL EXCAVATED OR FILLED AREAS IN STRICT ACCORDANCE WITH THE GEOTECHNICAL REPORT'S GUIDANCE. MOISTURE CONTENT AT TIME OF PLACEMENT MUST BE SUBMITTED IN A COMPACTION REPORT PREPARED BY A QUALIFIED GEOTECHNICAL ENGINEER, REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED. THIS REPORT MUST VERIFY THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES WHICH ARE IN EFFECT AND WHICH ARE APPLICABLE TO THE PROJECT. SUBBASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT MUST BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE BY OWNER/DEVELOPER, OR OWNER/DEVELOPER'S REPRESENTATIVE, SUBBASE MUST BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL, COMPACTED AS THE GEOTECHNICAL REPORT DIRECTS. EARTHWORK ACTIVITIES INCLUDING, BUT NOT LIMITED TO, EXCAVATION, BACKFILL, AND COMPACTING MUST COMPLY WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES. EARTHWORK ACTIVITIES MUST COMPLY WITH THE STANDARD STATE DOT SPECIFICATIONS FOR ROADWAY CONSTRUCTION (LATEST EDITION) AND ANY AMENDMENTS OR REVISIONS THERETO.
6. IN THE EVENT OF A DISCREPANCY(IES) AND/OR A CONFLICT(S) BETWEEN PLANS, OR RELATIVE TO OTHER PLANS, THE GRADING PLAN TAKES PRECEDENCE AND CONTROLS. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, OF ANY DISCREPANCY(IES) AND/OR CONFLICT(S).
7. THE CONTRACTOR IS RESPONSIBLE TO IMPORT FILL OR EXPORT EXCESS MATERIAL AS NECESSARY TO CONFORM TO THE PROPOSED GRADING, AND TO BACKFILL EXCAVATIONS FOR THE INSTALLATION OF UNDERGROUND IMPROVEMENTS.

ACCESSIBILITY DESIGN GUIDELINES

(Rev. 1/2020)

1. ALL ACCESSIBLE (A.K.A. ADA) COMPONENTS AND ACCESSIBLE ROUTES MUST BE CONSTRUCTED TO MEET, AT A MINIMUM, THE MORE STRINGENT OF: (A) THE REQUIREMENTS OF THE "AMERICANS WITH DISABILITIES ACT" (ADA) CODE (42 U.S.C. § 12101 ET SEQ. AND 42 U.S.C. § 4151 ET SEQ.); AND (B) ANY APPLICABLE LOCAL AND STATE GUIDELINES, AND ANY AND ALL AMENDMENTS TO BOTH, WHICH ARE IN EFFECT WHEN THESE PLANS WERE COMPLETED.
2. THE CONTRACTOR MUST REVIEW ALL DOCUMENTS REFERENCED IN THESE NOTES FOR ACCURACY, COMPLIANCE AND CONSISTENCY WITH INDUSTRY GUIDELINES.
3. THE CONTRACTOR MUST EXERCISE APPROPRIATE CARE AND PRECISION IN CONSTRUCTION OF ACCESSIBLE (ADA) COMPONENTS AND ACCESSIBLE ROUTES FOR THE SITE. FINISHED SURFACES ALONG THE ACCESSIBLE ROUTE OF TRAVEL FROM PARKING SPACES, PUBLIC TRANSPORTATION, PEDESTRIAN ACCESS, AND INTER-BUILDING ACCESS, TO POINTS OF ACCESSIBLE BUILDING ENTRANCE/EXIT, MUST COMPLY WITH THE ACCESSIBLE GUIDELINES AND REQUIREMENTS WHICH INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
   A. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SLOPES MUST NOT EXCEED 1:50 (2.0%) IN ANY DIRECTION.
   B. PATH OF TRAVEL ALONG ACCESSIBLE ROUTE MUST PROVIDE A 36-INCHES MINIMUM WIDTH (48-INCHES PREFERRED), OR AS SPECIFIED BY THE GOVERNING AGENCY. UNOBSTRUCTED WIDTH OF TRAVEL (CAR OVERHANGS AND/OR HANDRAILS) MUST NOT REDUCE THIS MINIMUM WIDTH. THE SLOPE MUST NOT EXCEED 1:20 (5.0%) IN THE DIRECTION OF TRAVEL AND MUST NOT EXCEED 1:50 (2.0%) IN CROSS SLOPE. WHERE ACCESSIBLE PATH OF TRAVEL IS GREATER THAN 1:20 (5.0%), AN ACCESSIBLE RAMP MUST BE PROVIDED. ALONG THE ACCESSIBLE PATH OF TRAVEL, OPENINGS MUST NOT EXCEED 1/2-INCH IN WIDTH. VERTICAL CHANGES OF UP TO 1/2-INCH ARE PERMITTED ONLY IF THEY INCLUDES A 1/4-INCH BEVEL AT A SLOPE NOT STEEPER THAN 1:2. NO VERTICAL CHANGES OVER 1/4-INCH ARE PERMITTED.
   C. ACCESSIBLE RAMPS MUST NOT EXCEED A SLOPE OF 1:12 (8.3%) AND A RISE OF 30-INCHES. LEVEL LANDINGS MUST BE PROVIDED AT EACH END OF ACCESSIBLE RAMPS. LANDING MUST PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES, AND MUST NOT EXCEED 1:50 (2.0%) SLOPE IN ANY DIRECTION. RAMPS THAT CHANGE DIRECTION BETWEEN RUNS AT LANDINGS MUST HAVE A CLEAR LANDING OF A MINIMUM OF 60-INCHES BY 60-INCHES. HAND RAILS ON BOTH SIDES OF THE RAMP MUST BE PROVIDED ON AN ACCESSIBLE RAMP WITH A RISE GREATER THAN 6-INCHES.
   D. ACCESSIBLE CURB RAMPS MUST NOT EXCEED A SLOPE OF 1:12 (8.3%). WHERE FLARED SIDES ARE PROVIDED, THEY MUST NOT EXCEED 1:10 (10%) SLOPE. LEVEL LANDING MUST BE PROVIDED AT RAMPS TOP AT A MINIMUM OF 36-INCHES LONG (48-INCHES PREFERRED). IN ALTERATIONS, WHEN THERE IS NO LANDING AT THE TOP, FLARE SIDES SLOPES MUST NOT EXCEED A SLOPE OF 1:12 (8.3%).
   E. DOORWAY LANDINGS AREAS MUST BE PROVIDED ON THE EXTERIOR SIDE OF ANY DOOR LEADING TO AN ACCESSIBLE PATH OF TRAVEL. THIS LANDING MUST BE SLOPED AWAY FROM THE DOOR NO MORE THAN 1:50 (2.0%) FOR POSITIVE DRAINAGE. THIS LANDING AREA MUST BE NO FEWER THAN 60-INCHES (5 FEET) LONG, EXCEPT WHERE OTHERWISE CLEARLY PERMITTED BY ACCESSIBLE STANDARDS FOR ALTERNATIVE DOORWAY OPENING CONDITIONS. (SEE ICC/ANSI A117.1-2009 AND OTHER REFERENCES INCORPORATED BY CODE).
   F. WHEN THE PROPOSED CONSTRUCTION INVOLVES RECONSTRUCTION, MODIFICATION, REVISION OR EXTENSION OF OR TO ACCESSIBLE COMPONENTS FROM EXISTING DOORWAYS OR SURFACES, THE CONTRACTOR MUST VERIFY ALL EXISTING ELEVATIONS SHOWN ON THE PLAN. NOTE THAT TABLE 405.2 OF THE DEPARTMENT OF JUSTICE'S ADA STANDARDS FOR ACCESSIBLE DESIGN ALLOWS FOR STEEPER RAMP SLOPES, IN RARE CIRCUMSTANCES. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, OF ANY DISCREPANCIES AND/OR FIELD CONDITIONS THAT DIFFER IN ANY WAY OR IN ANY RESPECT FROM WHAT IS SHOWN ON THE PLANS BEFORE COMMENCING ANY WORK. CONSTRUCTED IMPROVEMENTS MUST FALL WITHIN THE MAXIMUM AND MINIMUM LIMITATIONS IMPOSED BY THE BARRIER FREE REGULATIONS AND THE ACCESSIBLE GUIDELINES.
   G. THE CONTRACTOR MUST VERIFY ALL OF THE SLOPES OF THE CONTRACTOR'S FORMS PRIOR TO POURING CONCRETE. IF ANY NON-CONFORMANCE EXISTS OR IS OBSERVED OR DISCOVERED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, PRIOR TO POURING CONCRETE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL COSTS TO REMOVE, REPAIR AND/OR REPLACE NON-CONFORMING CONCRETE AND/OR PAVEMENT SURFACES.
4. IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR REVIEW THE INTENDED CONSTRUCTION TO ENSURE SAME IS CONSISTENT WITH THE LOCAL BUILDING CODE PRIOR TO COMMENCING CONSTRUCTION.

DRAINAGE AND UTILITY NOTES

(Rev.2/2021)

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. LOCATIONS OF ALL EXISTING AND PROPOSED SERVICES ARE APPROXIMATE, AND THE CONTRACTOR MUST INDEPENDENTLY VERIFY AND CONFIRM THOSE LOCATIONS AND SERVICES WITH LOCAL UTILITY COMPANIES PRIOR TO COMMENCING ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR MUST INDEPENDENTLY VERIFY AND CONFIRM ALL SANITARY CONNECTION POINTS AND ALL OTHER UTILITY SERVICE CONNECTION POINTS IN THE FIELD, PRIOR TO COMMENCING ANY CONSTRUCTION. THE CONTRACTOR MUST REPORT ALL DISCREPANCIES, ERRORS AND OMISSIONS IN WRITING, TO THE ENGINEER OF RECORD.
3. THE CONTRACTOR MUST VERTICALLY AND HORIZONTALLY LOCATE ALL UTILITIES AND SERVICES INCLUDING, BUT NOT LIMITED TO, GAS, WATER, ELECTRIC, SANITARY AND STORM, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN THE LIMITS OF DISTURBANCE OR WORK SPACE, WHICHEVER IS GREATER. THE CONTRACTOR MUST USE, REFER TO, AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL OF THE UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL DAMAGE TO ANY EXISTING UTILITIES WHICH OCCUR DURING CONSTRUCTION, AT NO COST TO THE OWNER AND AT CONTRACTOR'S SOLE COST AND EXPENSE. THE CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH DAMAGE TO ANY EXISTING UTILITIES WHICH OCCURS DURING CONSTRUCTION.
4. THE CONTRACTOR MUST FIELD VERIFY THE PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND UTILITIES BY USING A TEST PIT TO CONFIRM EXACT DEPTH, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
5. STORMWATER ROOF DRAIN LOCATIONS ARE BASED ON ARCHITECTURAL PLANS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF SAME BASED UPON FINAL ARCHITECTURAL PLANS.
6. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING SITE PLAN DOCUMENTS AND ARCHITECTURAL PLANS FOR EXACT BUILDING UTILITY CONNECTION LOCATIONS; GREASE TRAP REQUIREMENTS; AND DETAILS, DOOR ACCESS, AND EXTERIOR GRADING. THE ARCHITECT WILL DETERMINE THE UTILITY SERVICE SIZES. THE CONTRACTOR MUST COORDINATE INSTALLATION OF UTILITY SERVICES WITH THE INDIVIDUAL COMPANIES TO AVOID CONFLICTS AND TO ENSURE THAT PROPER DEPTHS ARE ACHIEVED. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT INSTALLATION OF ALL IMPROVEMENTS COMPLIES WITH ALL UTILITY REQUIREMENTS OF THE APPLICABLE JURISDICTION AND REGULATORY AGENCIES AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES AND, FURTHER, IS RESPONSIBLE FOR COORDINATING THE UTILITY TIE-INS/CONNECTIONS PRIOR TO CONNECTING TO THE EXISTING UTILITY/SERVICE. WHERE A CONFLICT(S) EXISTS BETWEEN THESE DOCUMENTS AND THE ARCHITECTURAL PLANS, OR WHERE ARCHITECTURAL PLAN UTILITY CONNECTION POINTS DIFFER, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, AND PRIOR TO CONSTRUCTION, MUST RESOLVE SAME.
7. ALL FILL, COMPACTION, AND BACKFILL MATERIALS REQUIRED FOR UTILITY INSTALLATION MUST BE EXACTLY AS PER THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT AND THE CONTRACTOR MUST COORDINATE SAME WITH THE APPLICABLE UTILITY COMPANY SPECIFICATIONS. WHEN THE PROJECT DOES NOT HAVE GEOTECHNICAL RECOMMENDATIONS, FILL AND COMPACTION MUST COMPLY WITH APPLICABLE REQUIREMENTS AND SPECIFICATIONS. ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR DESIGN OF TRENCH BACKFILL OR FOR COMPACTION REQUIREMENTS
8. DURING THE INSTALLATION OF SANITARY, STORM, AND ALL UTILITIES, THE CONTRACTOR MUST MAINTAIN A CONTEMPORANEOUS AND THOROUGH RECORD OF CONSTRUCTION TO IDENTIFY THE AS-INSTALLED LOCATIONS OF ALL UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR MUST CAREFULLY NOTE ANY INSTALLATIONS THAT DEVIATE, IN ANY RESPECT, FROM THE INFORMATION CONTAINED IN THESE PLANS. THIS RECORD MUST BE KEPT ON A CLEAN COPY OF THE APPROPRIATE PLAN(S), WHICH THE CONTRACTOR MUST PROMPTLY PROVIDE TO THE OWNER IMMEDIATELY UPON THE COMPLETION OF WORK.
9. THE CONTRACTOR MUST ENSURE THAT ALL UTILITY TRENCHES LOCATED IN EXISTING PAVED ROADWAYS INCLUDING SANITARY, WATER AND STORM SYSTEMS, ARE REPAIRED IN ACCORDANCE WITH REFERENCED MUNICIPAL, COUNTY AND OR STATE DOT DETAILS AS APPLICABLE. THE CONTRACTOR MUST COORDINATE INSPECTION AND APPROVAL OF COMPLETED WORK WITH THE AGENCY WITH JURISDICTION OVER SAME.
10. FINAL LOCATIONS OF PROPOSED UTILITY POLES, AND/ OR POLES TO BE RELOCATED ARE AT THE SOLE DISCRETION OF THE RESPECTIVE UTILITY COMPANY, REGARDLESS OF WHAT THIS PLAN DEPICTS.
11. WATER SERVICE MATERIALS, BURIAL DEPTH, AND COVER REQUIREMENTS MUST BE SPECIFIED BY THE LOCAL UTILITY COMPANY. THE CONTRACTOR MUST CONTACT THE APPLICABLE MUNICIPALITY TO CONFIRM THE PROPER WATER METER AND VAULT, PRIOR TO COMMENCING CONSTRUCTION.
12. THE TOPS OF EXISTING MANHOLES, INLET STRUCTURES, AND SANITARY CLEANOUT MUST BE ADJUSTED, AS NECESSARY, TO MATCH PROPOSED FINISHED GRADES WITH NO TRIPPING OR SAFETY HAZARD IN ACCORDANCE WITH ALL APPLICABLE STANDARDS, REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.

LIGHTING NOTES

(Rev. 1/2020)

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. THE LIGHTING CONTRACTOR MUST COMPLY WITH ALL APPLICABLE CONTRACTOR REQUIREMENTS INDICATED IN THE PLANS, INCLUDING BUT NOT LIMITED TO GENERAL NOTES, GRADING AND UTILITY NOTES, SITE SAFETY, AND ALL AGENCY AND GOVERNMENTAL REGULATIONS.
3. THE LIGHTING PLAN DEPICTS PROPOSED, SUSTAINED ILLUMINATION LEVELS CALCULATED USING DATA PROVIDED BY THE NOTED MANUFACTURER. ACTUAL SUSTAINED SITE ILLUMINATION LEVELS AND PERFORMANCE OF LUMINAIRES MAY VARY DUE TO VARIATIONS IN WEATHER, ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, THE SERVICE LIFE OF EQUIPMENT AND LUMINAIRES AND OTHER RELATED VARIABLE FIELD CONDITIONS.
4. THE LIGHTING VALUES AND CALCULATION POINTS DEPICTED ON THIS PLAN ARE ANALYZED ON A HORIZONTAL GEOMETRIC PLANE AT GROUND LEVEL UNLESS OTHERWISE NOTED. ILLUMINATION LEVELS ARE SHOWN IN FOOT-CANDLES (FC).
5. THE LUMINAIRES, LAMPS AND LENSES MUST BE REGULARLY INSPECTED/MAINTAINED TO ENSURE THAT THEY FUNCTION PROPERLY. THIS WORK SHOULD INCLUDE, BUT IS NOT LIMITED TO, VISUAL OBSERVATION, CLEANING OF LENSES, AND RE-LAMPING ACCORDING TO MANUFACTURER RECOMMENDATIONS. FAILURE TO FOLLOW THE ABOVE STEPS COULD RESULT IN IMPROPER LIGHT DISTRIBUTION AND FAILURE TO COMPLY WITH THE APPROVED DESIGN. UPON COMPLETION AND OWNER'S ACCEPTANCE OF THE WORK, THE ABOVE RESPONSIBILITIES BECOMES SOLELY THE OWNER'S.
6. THE LIGHTING PLAN IS INTENDED TO SHOW THE LOCATIONS AND TYPE OF LUMINAIRES. POWER SYSTEM, CONDUITS, WIRING AND OTHER ELECTRICAL COMPONENTS ARE SOLELY THE ARCHITECT'S, MECHANICAL ENGINEER'S AND/OR LIGHTING CONTRACTOR'S RESPONSIBILITY, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. THE LIGHTING CONTRACTOR MUST COORDINATE WITH THE PROJECT ARCHITECT AND/OR ELECTRICAL ENGINEER REGARDING ANY AND ALL POWER SOURCES AND TIMING DEVICES NECESSARY TO MEET THE DESIGN INTENT. THESE ITEMS MUST BE INSTALLED AS REQUIRED BY STATE AND LOCAL REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF LIGHTING FIXTURES AND APPURTENANCES IN ACCORDANCE WITH ALL APPLICABLE BUILDING AND ELECTRICAL CODES.
7. THE CONTRACTOR MUST BRING IMMEDIATELY, IN WRITING, ANY LIGHT LOCATIONS THAT CONFLICT WITH DRAINAGE, UTILITIES, OR OTHER STRUCTURE(S) TO THE ENGINEER OF RECORD'S ATTENTION, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
8. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT SHIELDING AND OR ROTATED OPTICS ARE INSTALLED AS INDICATED ON THE PLAN IN ORDER TO ACHIEVE THE LIGHTING LEVELS THE REVIEWING AGENCY APPROVED.

SOIL EROSION & SEDIMENT CONTROL PLAN NOTES

(Rev. 1/2019)

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. OMITTED.
3. OMITTED.
4. OMITTED.
5. OMITTED.
6. OMITTED.
7. OMITTED.
8. OMITTED.
9. OMITTED.
10. OMITTED.
11. OMITTED.
12. THIS PLAN REPRESENTS THE MINIMUM LEVEL OF IMPLEMENTATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES, MEASURES AND STRUCTURES. ADDITIONAL FACILITIES, MEASURES AND STRUCTURES MUST BE INSTALLED WHERE NECESSARY TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS AND/OR TO PREVENT ANY, INCLUDING THE INCIDENTAL DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
13. THE CONTRACTOR MUST PROTECT ALL EXISTING TREES AND SHRUBS. THE CONTRACTOR MUST REFER TO THE LANDSCAPE AND/OR DEMOLITION PLAN(S) FOR TREE PROTECTION, FENCE LOCATIONS AND DETAILS.
14. THE CONTRACTOR MUST REFER TO GRADING PLANS FOR ADDITIONAL INFORMATION.
15. THE CONTRACTOR MUST CLEAN EXISTING AND PROPOSED DRAINAGE STRUCTURES AND INTERCONNECTING PIPES ON OR OFF-SITE AS THE JURISDICTIONAL AGENCY REQUIRES, BOTH AT THE TIME OF SITE STABILIZATION AND AT END OF PROJECT.
16. SOIL EROSION CONTROL MEASURES MUST BE ADJUSTED OR RELOCATED BY THE CONTRACTOR AS IDENTIFIED DURING SITE OBSERVATION IN ORDER TO MAINTAIN THE COMPLETE EFFECTIVENESS OF ALL CONTROL MEASURES.
17. OMITTED.
18. EROSION CONTROL MEASURES MUST CONFORM TO THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL UNLESS OTHERWISE NOTED, OR AS UNLESS OTHERWISE CLEARLY AND SPECIFICALLY DIRECTED BY ENGINEER. INSTALLATION OF EROSION CONTROL, CLEARING, AND SITE WORK MUST BE PERFORMED EXACTLY AS INDICATED IN THE EROSION CONTROL CONSTRUCTION NOTES.
19. REFER TO THE APPROVED EROSION AND SEDIMENT CONTROL PLANS FOR THE DISTURBED LAND AREA OF THIS SITE.
20. REFER TO THE APPROVED EROSION AND SEDIMENT CONTROL PLANS FOR THE EROSION CONTROL MEASURES PROPOSED FOR THIS SITE.
21. INSTALLATION OF EROSION CONTROL DEVICES MUST BE IN ACCORDANCE WITH ALL OF THE MANUFACTURER'S RECOMMENDATIONS AND APPROVED DETAILS AS SHOWN ON THE APPROVED EROSION AND SEDIMENT CONTROL PLANS.
22. CONTRACTOR MUST INSPECT EROSION CONTROL MEASURES WEEKLY AND AFTER EVERY RAIN EVENT. CONTRACTOR MUST IMMEDIATELY CLEAR AND REMOVE ANY SILT AS RECOMMENDED BY THE APPROVED DETAILS ON THE APPROVED EROSION AND SEDIMENT CONTROL PLANS OR AS OUTLINED IN THE SPECIFICATIONS LISTED IN NOTE #18.
23. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, CONTRACTOR MUST COMPLETE PERMANENT OR TEMPORARY STABILIZATION WITHIN: A) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1), AND B) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING. WHEN AREAS ARE DISTURBED AFTER THE GROWING SEASON, CONTRACTOR MUST STABILIZE SAME WITH GEOTEXTILE FABRIC AND MAINTAIN SAME IN STRICT ACCORDANCE WITH BEST MANAGEMENT PRACTICES.
24. CONTRACTOR MUST INSTALL ADDITIONAL EROSION CONTROL MEASURES IF REQUIRED BY THE ENGINEER OR THE LOCAL EROSION AND SEDIMENT CONTROL INSPECTOR, TO PREVENT THE INCIDENTAL AND ANY DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
25. THE CONTRACTOR MUST BE RESPONSIBLE FOR ALL INSPECTING AND MAINTAINING ALL EROSION CONTROL MEASURES ON THE SITE UNTIL PERMANENT PAVING AND TURF/LANDSCAPING IS ESTABLISHED AND UPON APPROVAL OF THE LOCAL EROSION AND SEDIMENT CONTROL INSPECTOR. THE COSTS OF INSTALLING AND MAINTAINING THE EROSION CONTROL MEASURES MUST BE INCLUDED IN THE BID PRICE FOR THE SITE WORK AND THE CONTRACTOR IS RESPONSIBLE FOR ALL SUCH COSTS.
26. CONTRACTOR MUST CONTINUE TO MAINTAIN ALL EROSION CONTROL MEASURES UNTIL THE COMPLETION OF CONSTRUCTION AND THE ESTABLISHMENT OF VEGETATION AND UPON THE APPROVAL OF THE LOCAL EROSION AND SEDIMENT CONTROL INSPECTOR.
27. CONTRACTOR MUST REMOVE EROSION CONTROL MEASURES, SILT AND DEBRIS AFTER ESTABLISHING PERMANENT VEGETATION COVER OR OTHER SPECIFIED METHOD OF STABILIZATION AND UPON THE APPROVAL OF THE LOCAL EROSION AND SEDIMENT CONTROL INSPECTOR.
28. WITHOUT WRITTEN APPROVAL OF THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) OR LOCAL SOIL CONSERVATION DISTRICT (SCD), UNSTABILIZED AREAS OF DISTURBANCE THROUGHOUT THE SITE MUST NOT BE MORE THAN AS APPROVED BY MDE OR THE LOCAL SCD AT ANY TIME. ADDITIONAL INSPECTION REQUIREMENTS AS STIPULATED BY THE JURISDICTIONAL AGENCY MUST BE ADOPTED AS REQUIRED FOR DISTURBANCE MORE THAN AS APPROVED BY MDE OR THE LOCAL SCD.

BOHLER™

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY
1	7/20/22	REV. PER CLIENT COMMENTS	DMD / RMS
2	8/11/22	REV. PER CLIENT COMMENTS	DMD / RMS

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PROJECT No.:	MDA220044.00
DRAWN BY:	DMD
CHECKED BY:	MJG
DATE:	05/16/2022
CAD I.D.:	MDA220044CNDS

PROJECT:

CONSTRUCTION DOCUMENTS

— FOR —

TRADEPOINT ATLANTIC

MMM MAINTENANCE FACILITY

1331 POWERHOUSE ROAD
BALTIMORE, MD 21219
TM 111, GRID 14, PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
JBASS@BOHLERENG.COM

R.M. STASIOWSKI

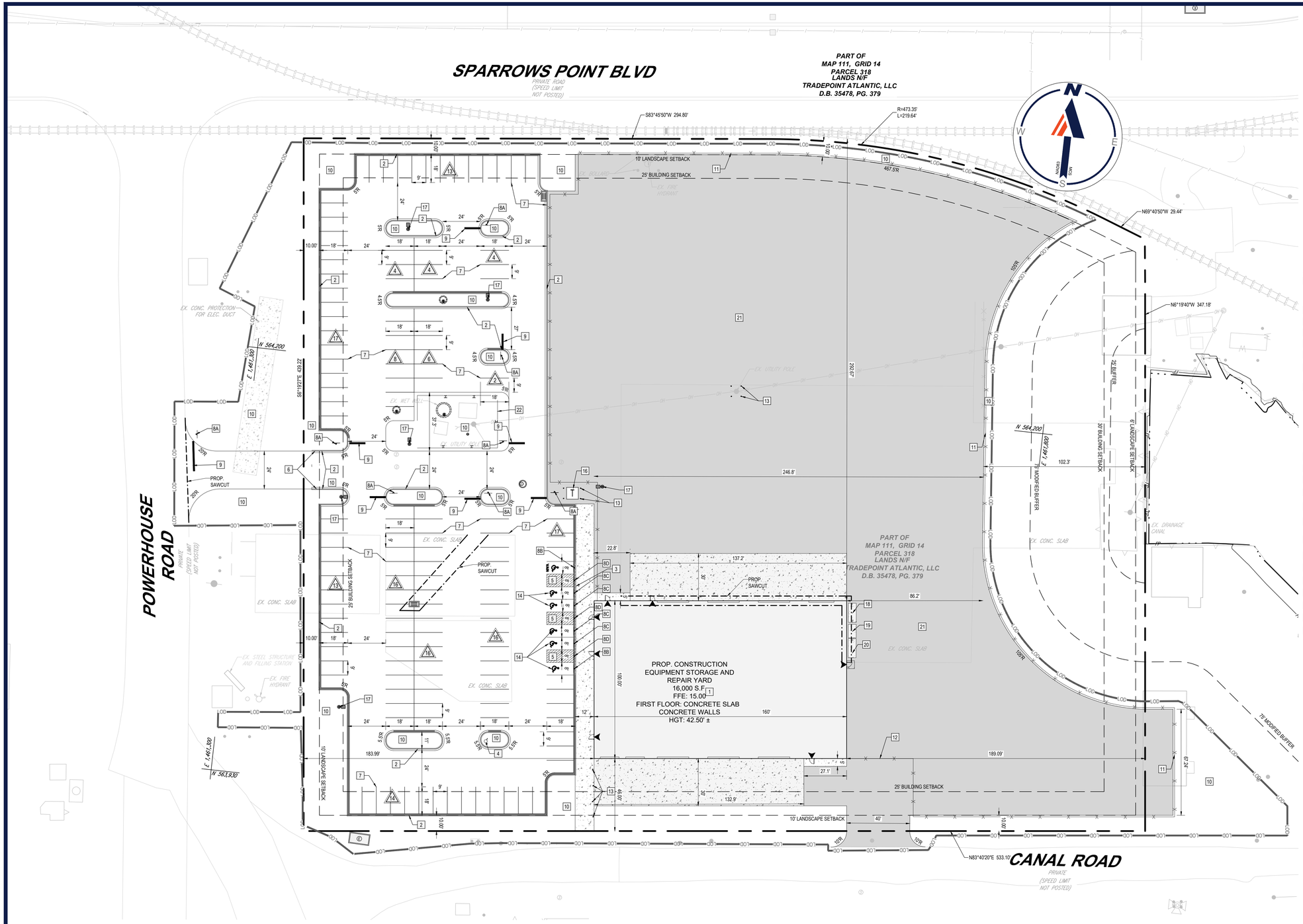
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 49425
PROFESSIONAL CERTIFICATION
I, RYAN M. STASIOWSKI, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49425, EXPIRATION DATE: 6/9/2024

SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:
C-102

MDE PROJECT NO. 22-SF-0193



SITE KEYNOTES

1. SITE CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING AND THE LOCATION OF DOORWAYS, UTILITIES, ETC.
2. 6" CONCRETE CURB AND GUTTER
3. DEPRESSED CONCRETE CURB AND GUTTER
4. FIRE HYDRANT
5. 4" WHITE STRIPING, 45° ANGLE, 4" O.C. PAVEMENT MARKING
6. 5' CURB TAPER
7. 4" WHITE PARKING STALL PAVEMENT MARKING (9'X18' TYP.)
8. TRAFFIC SIGNAGE. ALL SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) BY THE US DEPARTMENT OF TRANSPORTATION
   - 8A "STOP" SIGN (R1-1)
   - 8B ADA ACCESSIBLE SIGN (WITH VAN ACCESSIBLE SIGN)
   - 8C ADA ACCESSIBLE SIGN
   - 8D NO PARKING IN ACCESS AISLE SIGN
9. 24" WHITE PAINTED STOP BAR
10. LANDSCAPED AREA
11. 6' CHAIN LINK FENCE (REFER TO ARCHITECTURAL PLANS)
12. MANUAL SLIDING GATE (REFER TO ARCHITECTURAL PLANS)
13. 6" BOLLARDS
14. ADA PARKING SYMBOL (WHITE SYMBOL WITH BLUE BACKGROUND)
15. LIGHT POLE (REFER TO LIGHTING PLANS FOR FIXTURE TYPE AND ARCHITECHTURAL PLANS FOR BASE)
16. TRANSFORMER
17. SITE LIGHT
18. DIESEL FUEL TANK PAD (REFER TO ARCHITECTURAL PLANS)
19. AIR COMPRESSOR PAD (REFER TO ARCHITECTURAL PLANS)
20. USED OIL TANK PAD (REFER TO ARCHITECTURAL PLANS)
21. GRAVEL
22. GUARD RAIL

LEGEND

- HEAVY DUTY CONCRETE PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- GRAVEL EQUIPMENT STORAGE AREA
- PROPOSED BUILDING
- CONCRETE SIDEWALK

30 15 7.5 0 30
1"= 30'

Aug 11, 2022
H:\2022\MDA220044.00\CAD\DRAWINGS\PLAN SETS\CONSTRUCTION DOCUMENTS\MDA220044.00 - SITE----1-LAYOUT C-301 SITE PLAN.DWG

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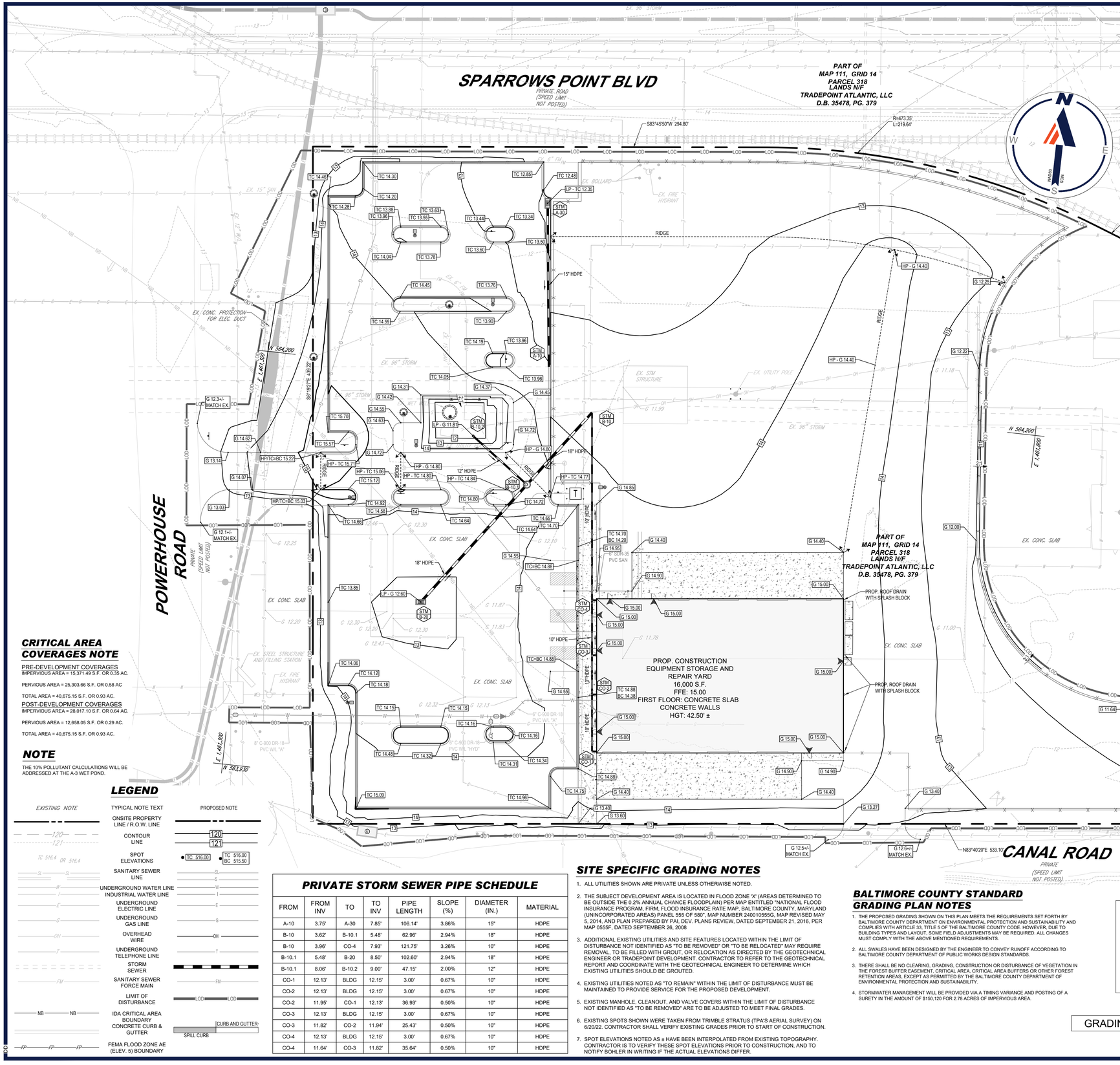
SHEET TITLE:

SITE PLAN

SHEET NUMBER:

C-301

MDE PROJECT NO. 22-SF-0193



LOCATION MAP

COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=1000'

BENCHMARK INFORMATION

ELEVATIONS ARE BASED ON NAVD 88. COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER THE FOLLOWING MONUMENTS:

BCO# 1433 (CAPPED REBAR)
N 571,683.79, E 1,466,230.69, ELEV. 16.59
IN MEDIAN OF NORTH POINT BLVD SOUTH OF NORTH SNYDER AVE.

GIS #2 (BRASS DISK)
N 565,182.39, E. 1,464,480.72, ELEV. 9.95
EAST SIDE OF WHARF ROAD 408'± NORTH OF LIGHT TOWER

STORM STRUCTURE SCHEDULE

NAME	TYPE	RIM ELEV. (FT.)	INVERTS
A-10	FIELD CONNECTION	-	INV IN = 3.75' (15") INV IN = 0.75' (96") INV OUT = 0.75' (96")
A-30	PRECAST DOUBLE TYPE 'S' INLET (BALT. CO. STD. D-2.19A)	11.85'	INV OUT = 7.85' (15")
B-10	FIELD CONNECTION	-	INV IN = 3.62' (18") INV IN = 0.75' (96") INV IN = 3.96' (10") INV OUT = 0.75' (96")
B-10.1	PRECAST 48" TYPE 'B' MANHOLE (BALT. CO. STD. D-3.01)	14.20'	INV IN = 5.48' (18") INV IN = 8.06' (12") INV OUT = 5.48' (18")
B-10.2	12" NYLOPLAST DRAIN BASIN W/ DOME GRATE	11.81'	INV OUT = 9.00' (12")
B-20	PRECAST DOUBLE TYPE 'S' INLET (BALT. CO. STD. D-2.19A)	12.60'	INV OUT = 8.50' (18")
CO-1	CLEANOUT	14.97'	INV IN = 12.13' (10") INV OUT = 12.13' (10")
CO-2	CLEANOUT	14.97'	INV IN = 11.95' (10") INV IN = 12.13' (10") INV OUT = 11.94' (10")
CO-3	CLEANOUT	14.97'	INV IN = 11.82' (10") INV IN = 12.13' (10") INV OUT = 11.82' (10")
CO-4	CLEANOUT	14.97'	INV IN = 11.64' (10") INV IN = 12.13' (10") INV OUT = 7.93' (10")

30 15 7.5 0 30
1"= 30'

STORMWATER MANAGEMENT PERMIT NOT REQUIRED

BALTIMORE COUNTY
DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

APPROVED FOR GRADING

DATE

CRITICAL AREA COVERAGES NOTE

PRE-DEVELOPMENT COVERAGES
IMPERVIOUS AREA = 15,371.49 S.F. OR 0.35 AC.

PERVIOUS AREA = 25,303.66 S.F. OR 0.58 AC

TOTAL AREA = 40,675.15 S.F. OR 0.93 AC.

POST-DEVELOPMENT COVERAGES
IMPERVIOUS AREA = 28,017.10 S.F. OR 0.64 AC.

PERVIOUS AREA = 12,658.05 S.F. OR 0.29 AC.

TOTAL AREA = 40,675.15 S.F. OR 0.93 AC.

NOTE

THE 10% POLLUTANT CALCULATIONS WILL BE ADDRESSED AT THE A-3 WET POND.

LEGEND

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
	ONSITE PROPERTY LINE / R.O.W. LINE	
120 / 121	CONTOUR LINE	120 / 121
TC 516.4 OR 516.4	SPOT ELEVATIONS	• TC 516.00 • TC 516.00 BC 515.50
S	SANITARY SEWER LINE	SL
W	UNDERGROUND WATER LINE	W
I	INDUSTRIAL WATER LINE	I
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
	STORM SEWER	
FM	SANITARY SEWER FORCE MAIN	FM
LOD	LIMIT OF DISTURBANCE	LOD LOD
NB NB	IDA CRITICAL AREA BOUNDARY	
	CONCRETE CURB & GUTTER	CURB AND GUTTER
		SPILL CURB
FP FP FP	FEMA FLOOD ZONE AE (ELEV. 5) BOUNDARY	

PRIVATE STORM SEWER PIPE SCHEDULE

FROM	FROM INV	TO	TO INV	PIPE LENGTH	SLOPE (%)	DIAMETER (IN.)	MATERIAL
A-10	3.75'	A-30	7.85'	106.14'	3.86%	15"	HDPE
B-10	3.62'	B-10.1	5.48'	62.96'	2.94%	18"	HDPE
B-10	3.96'	CO-4	7.93'	121.75'	3.26%	10"	HDPE
B-10.1	5.48'	B-20	8.50'	102.60'	2.94%	18"	HDPE
B-10.1	8.06'	B-10.2	9.00'	47.15'	2.00%	12"	HDPE
CO-1	12.13'	BLDG	12.15'	3.00'	0.67%	10"	HDPE
CO-2	12.13'	BLDG	12.15'	3.00'	0.67%	10"	HDPE
CO-2	11.95'	CO-1	12.13'	36.93'	0.50%	10"	HDPE
CO-3	12.13'	BLDG	12.15'	3.00'	0.67%	10"	HDPE
CO-3	11.82'	CO-2	11.94'	25.43'	0.50%	10"	HDPE
CO-4	12.13'	BLDG	12.15'	3.00'	0.67%	10"	HDPE
CO-4	11.64'	CO-3	11.82'	35.64'	0.50%	10"	HDPE

SITE SPECIFIC GRADING NOTES

1. ALL UTILITIES SHOWN ARE PRIVATE UNLESS OTHERWISE NOTED.
2. THE SUBJECT DEVELOPMENT AREA IS LOCATED IN FLOOD ZONE 'X' (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, BALTIMORE COUNTY, MARYLAND (UNINCORPORATED AREAS) PANEL 555 OF 580", MAP NUMBER 24001055SG, MAP REVISED MAY 5, 2014, AND PLAN PREPARED BY PAI, DEV. PLANS REVIEW, DATED SEPTEMBER 21, 2016, PER MAP 0555F, DATED SEPTEMBER 26, 2008
3. ADDITIONAL EXISTING UTILITIES AND SITE FEATURES LOCATED WITHIN THE LIMIT OF DISTURBANCE NOT IDENTIFIED AS "TO BE REMOVED" OR "TO BE RELOCATED" MAY REQUIRE REMOVAL, TO BE FILLED WITH GROUT, OR RELOCATION AS DIRECTED BY THE GEOTECHNICAL ENGINEER OR TRADEPOINT DEVELOPMENT. CONTRACTOR TO REFER TO THE GEOTECHNICAL REPORT AND COORDINATE WITH THE GEOTECHNICAL ENGINEER TO DETERMINE WHICH EXISTING UTILITIES SHOULD BE GROUTED.
4. EXISTING UTILITIES NOTED AS "TO REMAIN" WITHIN THE LIMIT OF DISTURBANCE MUST BE MAINTAINED TO PROVIDE SERVICE FOR THE PROPOSED DEVELOPMENT.
5. EXISTING MANHOLE, CLEANOUT, AND VALVE COVERS WITHIN THE LIMIT OF DISTURBANCE NOT IDENTIFIED AS "TO BE REMOVED" ARE TO BE ADJUSTED TO MEET FINAL GRADES.
6. EXISTING SPOTS SHOWN WERE TAKEN FROM TRIMBLE STRATUS (TPA'S AERIAL SURVEY) ON 6/20/22. CONTRACTOR SHALL VERIFY EXISTING GRADES PRIOR TO START OF CONSTRUCTION.
7. SPOT ELEVATIONS NOTED AS ± HAVE BEEN INTERPOLATED FROM EXISTING TOPOGRAPHY. CONTRACTOR IS TO VERIFY THESE SPOT ELEVATIONS PRIOR TO CONSTRUCTION, AND TO NOTIFY BOHLER IN WRITING IF THE ACTUAL ELEVATIONS DIFFER.

BALTIMORE COUNTY STANDARD GRADING PLAN NOTES

1. THE PROPOSED GRADING SHOWN ON THIS PLAN MEETS THE REQUIREMENTS SET FORTH BY BALTIMORE COUNTY DEPARTMENT ON ENVIRONMENTAL PROTECTION AND SUSTAINABILITY AND COMPLIES WITH ARTICLE 33, TITLE 5 OF THE BALTIMORE COUNTY CODE. HOWEVER, DUE TO BUILDING TYPES AND LAYOUT, SOME FIELD ADJUSTMENTS MAY BE REQUIRED. ALL CHANGES MUST COMPLY WITH THE ABOVE MENTIONED REQUIREMENTS.
2. ALL SWALES HAVE BEEN DESIGNED BY THE ENGINEER TO CONVEY RUNOFF ACCORDING TO BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN STANDARDS.
3. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT, CRITICAL AREA, CRITICAL AREA BUFFERS OR OTHER FOREST RETENTION AREAS, EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.
4. STORMWATER MANAGEMENT WILL BE PROVIDED VIA A TIMING VARIANCE AND POSTING OF A SURETY IN THE AMOUNT OF $150,120 FOR 2.78 ACRES OF IMPERVIOUS AREA.

OWNER'S/DEVELOPER'S CERTIFICATION - GRADING

I/WE CERTIFY THAT ALL GRADING ON THIS SITE WILL BE DONE IN ACCORDANCE WITH THE CURRENT GRADING REQUIREMENTS AS SET FORTH BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY AND WITH THE REQUIREMENTS SPECIFIED IN ARTICLE 33, TITLE 5 OF THE BALTIMORE COUNTY CODE.

SIGNATURE OF OWNER/DEVELOPER — TITLE — DATE

PRINT NAME

OWNER/DEVELOPER

TRADEPOINT ATLANTIC, LLC
6995 BETHLEHEM BOULEVARD
SPARROWS POINT, MD 21219
CONTACT: LUKE KLUTTZ
PHONE: 443-909-9617

GRADING 1 OF 1

MARYLAND COORDINATE SYSTEM (MCS)

LIMIT OF DISTURBANCE: 225,604 S.F. OR 5.18 AC.

REVISIONS

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R.M. STASIOWSKI
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 49425
PROFESSIONAL CERTIFICATION
I, RYAN M. STASIOWSKI, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49425, EXPIRATION DATE: 6/9/2024

SHEET TITLE:

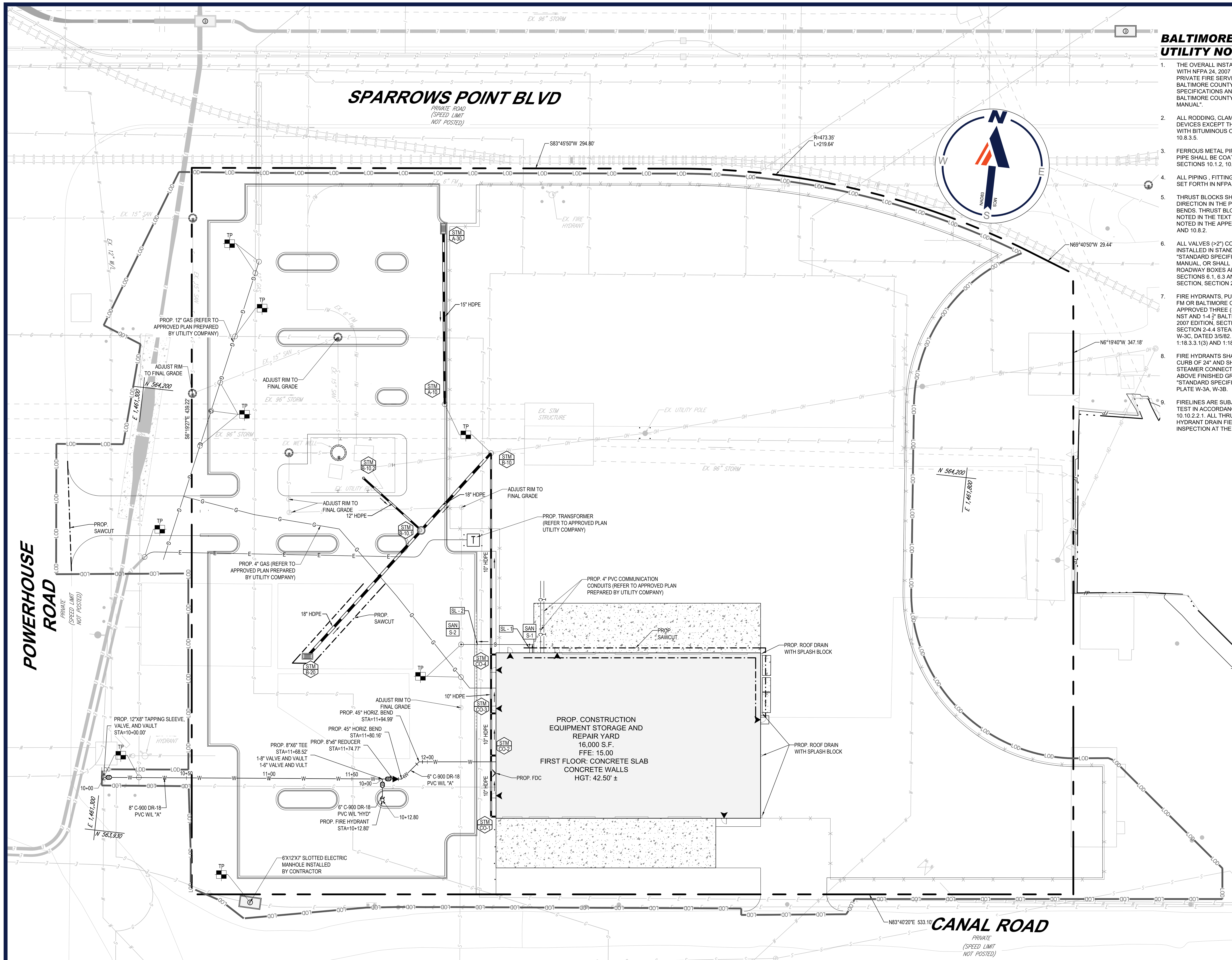
FINAL GRADING PLAN

SHEET NUMBER:

C-401

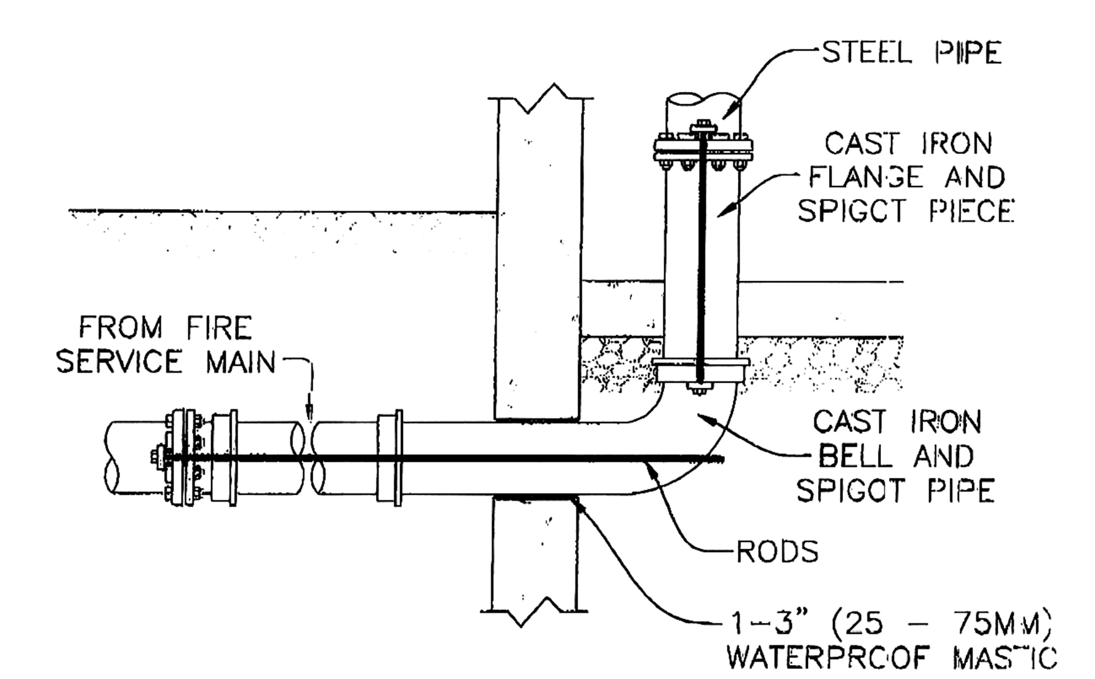
MDE PROJECT NO. 22-SF-0193

Aug 11, 2022
H:\2022\MDA220044.00\CAD\DRAWINGS\PLAN SET\CONSTRUCTION DOCUMENTS\MDA220044.00 - SITE-----LAYOUT C-401 GRADING PLAN



BALTIMORE COUNTY FIRE LINE UTILITY NOTES

1. THE OVERALL INSTALLATION AND DESIGN SHALL BE IN COMPLIANCE WITH NFPA 24, 2007 EDITION, "STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES"; THE BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS, "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION:; AND THE BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS "DESIGN MANUAL".
2. ALL RODDING, CLAMPS, NUTS, BOLTS, AND OTHER RESTRAINING DEVICES EXCEPT THRUST BLOCKS, SHALL BE CLEANED AND COATED WITH BITUMINOUS OR ASPHALT. NFPA 24, 2007 EDITION, SECTION 10.8.3.5.
3. FERROUS METAL PIPING, IF UTILIZED, SHALL BE LINED, AND STEEL PIPE SHALL BE COATED AND WRAPPED. NFPA 24, 2007 EDITION, SECTIONS 10.1.2, 10.1.3, 10.1.6, 10.1.6.2.
4. ALL PIPING , FITTINGS, AND JOINTS SHALL MEET THE REQUIREMENTS SET FORTH IN NFPA 24, 2007 EDITION, SECTION 10.1 THROUGH 10.3.5.
5. THRUST BLOCKS SHALL BE PROVIDED AT ALL CHANGES IN DIRECTION IN THE PIPELINE, AND AT ALL TEES, PLUGS, CAPS, AND BENDS. THRUST BLOCKS SHALL CONFORM TO THE BEARING AREAS NOTED IN THE TEXT OF THE STANDARD AND CONFIGURATIONS NOTED IN THE APPENDIX. NFPA 24, 2007 EDITION, SECTIONS 10.8.1.1 AND 10.8.2.
6. ALL VALVES (>2") CONTROLLING WATER SUPPLIES SHALL BE INSTALLED IN STANDARD VAULTS AS DETAILED BY THE BCDPW "STANDARD SPECIFICATION AND DETAILS FOR CONSTRUCTION" MANUAL, OR SHALL UTILIZE APPROVED POST INDICATOR VALVES. ROADWAY BOXES ARE NOT ACCEPTABLE. NFPA 24, 2007 EDITION, SECTIONS 6.1, 6.3 AND 6.4; BCDPW "DESIGN MANUAL", WATER MAIN SECTION, SECTION 2-4.7.
7. FIRE HYDRANTS, PUBLIC AND PRIVATE SHALL BE UL LISTED OR BE FM OR BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS APPROVED THREE (3) OUTLET HYDRANTS. OUTLETS SHALL BE 2-2 $\frac{1}{2}$" NST AND 1-4 $\frac{1}{2}$" BALTIMORE COUNTY STEAMER THREAD. NFPA 24, 2007 EDITION, SECTION 7.1.1 AND 7.1.1.2 BCDPW "DESIGN MANUAL", SECTION 2-4.4 STEAMER THREAD, AS DETAILED ON BCDPW PLATE W-3C, DATED 3/5/82. BALTIMORE COUNTY BILL 48-10 SECTION 1:18.3.3.1(3) AND 1:18.3.5.2.
8. FIRE HYDRANTS SHALL HAVE A CENTERLINE SET BACK FROM THE CURB OF 24" AND SHALL HAVE THE CENTERLINE OF THE 4-1/2" STEAMER CONNECTION NO LESS THAN 17" NOR MORE THAN 30" ABOVE FINISHED GRADE, FACING THE ACCESS DRIVE. BCDPW "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION", PLATE W-3A, W-3B.
9. FIRELINES ARE SUBJECT TO A MINIMUM OF A 200-PSI HYDROSTATIC TEST IN ACCORDANCE WITH NFPA 24, 2007 EDITION, SECTION 10.10.2.2.1. ALL THRUST BLOCKS, TIE RODS, VALVES, FITTINGS, AND HYDRANT DRAIN FIELDS SHALL BE EXPOSED FOR FIRE DEPARTMENT INSPECTION AT THE TIME OF THE TEST. PIPE JOINTS MAY BE COVERED AT THE TIME OF THE TEST.
10. THE MINIMUM DEPTH OF COVER FOR ALL UNDERGROUND FIRE LINES SHALL BE A MINIMUM OF 4'-0" MEASURED FROM THE TOP OF THE PIPE. NFPA 24, 2007 EDITION, SECTION 10.4 AND TABLE A10.5.1.
11. PIPE SHALL NOT BE RUN MORE THAN ONE PIPE LENGTH (APPROXIMATELY 20 FEET) UNDER BUILDINGS. FITTINGS SHALL NOT BE LOCATED WITHIN THE BEARING AREA OF ANY FOUNDATIONS UNLESS APPROVED BY THE DESIGN ENGINEER. NFPA 24, 2007 EDITION, SECTION 10.6.
12. SPOOL PIECES ON VERTICAL RISES OR HORIZONTAL STUB-INS SHALL BE WELDED OR SCREWED FLANGE, OR LISTED UNIFLANGE TYPE FITTING. NOTE: UNIFLANGE TYPE FITTINGS SHALL BE SPECIFICALLY LISTED FOR ABOVEGROUND USE.
13. ON SITE (PRIVATE) HYDRANTS SHALL BE PAINTED RED, IN ORDER TO DISTINGUISH THEM FROM (ORANGE) PUBLIC HYDRANTS. BALTIMORE COUNTY BILL 48-10, SECTION 1:18.3.5.2.
14. COORDINATE HYDROSTATIC TEST AND FLUSH WITH CONTRACTOR INSTALLING STUB-IN, SUCH THAT ENTIRE LEAD-IN IS TESTED AS A SINGLE UNIT.
15. COORDINATE HYDROSTATIC TEST AND FLUSH WITH CONTRACTOR INSTALLING LEAD-IN SUCH THAT ENTIRE LEAD TO THE BASE OF THE RISER IS TESTED AS A SINGLE UNIT.
16. RESTRAINED JOINT SYSTEMS. FIRE MAINS UTILIZING RESTRAINED JOINT SYSTEMS SHALL INCLUDE THE FOLLOWING PER NFPA 24, 2007 EDITION, SECTION 10.8.3:
    - A. LOCKING MECHANICAL OR PUSH-ON JOINTS
    - B. MECHANICAL JOINTS UTILIZING SETSCREW RETAINER GLANDS
    - C. BOLTED FLANGE JOINTS
    - D. HEAT-FUSED OR WELDED JOINTS
    - E. PIPE CLAMPS AND TIE RODS
    - F. OTHER APPROVED METHODS OR DEVICES.
17. PRIVATE HYDRANTS SUPPLIED BY FIRE PUMPS: PRIVATE FIRE HYDRANTS LOCATED ON THE DISCHARGE SIDE OF THE FIRE PUMPS SHALL HAVE THEIR BONNETS PAINTED WHITE IN ORDER TO INDICATE THAT SAID HYDRANTS ARE OFF THE DISCHARGE SIDE OF A FIRE PUMP. EXCEPTIONS FOR PRESENTLY EXISTING SYSTEMS MAY BE GRANTED AT THE DISCRETION OF THE CHIEF OF FIRE DEPARTMENT OF DESIGNEE. BALTIMORE COUNTY BILL 48-10 SECTION 1:18.3.5.1.
18. ALL UNDERGROUND PIPING SHALL BE FLUSHED PRIOR TO HYDROSTATIC TESTING IN ACCORDANCE TO NFPA 24, 2007 EDITION, SECTION 10.10.2.1.



TYPICAL CONNECTION TO STANDPIPE RISER
NOT TO SCALE

SPECIFIC UTILITY NOTES

1. CONTRACTOR TO PERFORM TEST PITS AS NOTED ON THE PLANS AND VERIFY ASSUMED INVERTS AND ADEQUATE COVER PRIOR TO CONSTRUCTION.
2. WATERLINES SHALL NORMALLY HAVE A MINIMUM 4' OF COVER FROM FINAL GRADE, EXCEPT WHERE WATERLINES CROSS OTHER UTILITIES, IN WHICH CASE THE MINIMUM COVER MAY DECREASE IN ORDER TO CROSS THE UTILITY.

TEST PIT NOTE

TP — CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY OR 2' BELOW PROPOSED UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING VA, LLC. IN WRITING.

SANITARY PIPE SCHEDULE

FROM	FROM INV	TO	TO INV	PIPE LENGTH	SLOPE (%)	DIAMETER (IN.)	MATERIAL	NUMBER
S-1	10.45'	BLDG	10.50'	5.00'	1.00%	6"	SDR-35	SL - 1
S-2	10.04'	S-1	10.45'	41.39'	1.00%	6"	SDR-35	SL - 2

SANITARY STRUCTURE SCHEDULE

NAME	TYPE	RIM ELEV. (FT.)	INVERTS
BLDG	BLDG	15.00'	INV OUT = 10.50' (6")
S-1	PROP. CLEANOUT	14.90'	INV IN = 10.45' (6") INV OUT = 10.45' (6")
S-2	PROP. CLEANOUT	14.71'	INV IN = 10.04' (6") INV IN = -1.95' (12") INV OUT = -1.95' (12")

30 15 7.5 0 30
1"= 30'

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LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
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TRANSPORTATION SERVICES

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PROJECT No.:	MDA220044.00
DRAWN BY:	DMD
CHECKED BY:	MJG
DATE:	05/16/2022
CAD I.D.:	MDA220044.00 - SITE

PROJECT:

CONSTRUCTION DOCUMENTS

FOR

TRADEPOINT ATLANTIC

MMM MAINTENANCE FACILITY

1331 POWERHOUSE ROAD
BALTIMORE, MD 21219
TM 111, GRID 14, PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

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SHEET TITLE:

UTILITY PLAN

SHEET NUMBER:
C-501

MDE PROJECT NO. 22-SF-0193

QUANTITY TAKEOFF OF SEDIMENT CONTROL MEASURES

**ALL PHASES

SILT FENCE:	2,580 LF.
AT-GRADE INLET PROTECTION	2 EA.
GABION INLET PROTECTION	1 EA.
STABILIZED CONSTRUCTION ENTRANCE:	1 EA.
MOUNTABLE BERM	1 EA.

EARTH WORK (TOTAL DEVELOPMENT)

CUT:	486 C.Y.
FILL:	11,430 C.Y.
NET:	10,944 C.Y. (FILL)

SPOIL MATERIAL SHALL BE DISCARDED AT A SITE WITH AN ACTIVE GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN. BORROW MATERIAL SHALL BE OBTAINED FROM AN APPROVED SITE WITH AN ACTIVE GRADING PERMIT AND AN APPROVED SEDIMENT CONTROL PLAN.

EARTH QUANTITIES LISTED ABOVE ARE FOR SEDIMENT CONTROL USE ONLY. CONTRACTOR SHALL NOT RELY ON THESE FIGURES FOR ESTIMATING AND BONDING PURPOSES.

INLET PROTECTION NOTE

THE CONTRACTOR IS REQUIRED TO INSTALL INLET PROTECTION ON ALL STORM DRAIN INLETS WITH THE EXCEPTION OF THE FOLLOWING:

*1) ANY INLET OUTFALLING DIRECTLY INTO A SEDIMENT TRAPPING DEVICE.
2) INLETS ON PRIVATE OR PUBLIC PAVED ROAD OPEN TO THE PUBLIC.
3) IF AN AREA AROUND THE GABION INLET PROTECTION DOES NOT DRAIN WITHIN 24 HOURS OF A RAIN EVENT, CONTRACTOR TO PUMP AREA THROUGH A FILTER BAG TO AN EXISTING UNDERGROUND STORM DRAIN SYSTEM OR PUMP TO AN EXISTING INLET THAT DRAINS DIRECTLY TO THE TINMILL CANAL WASTEWATER TREATMENT PLANT.

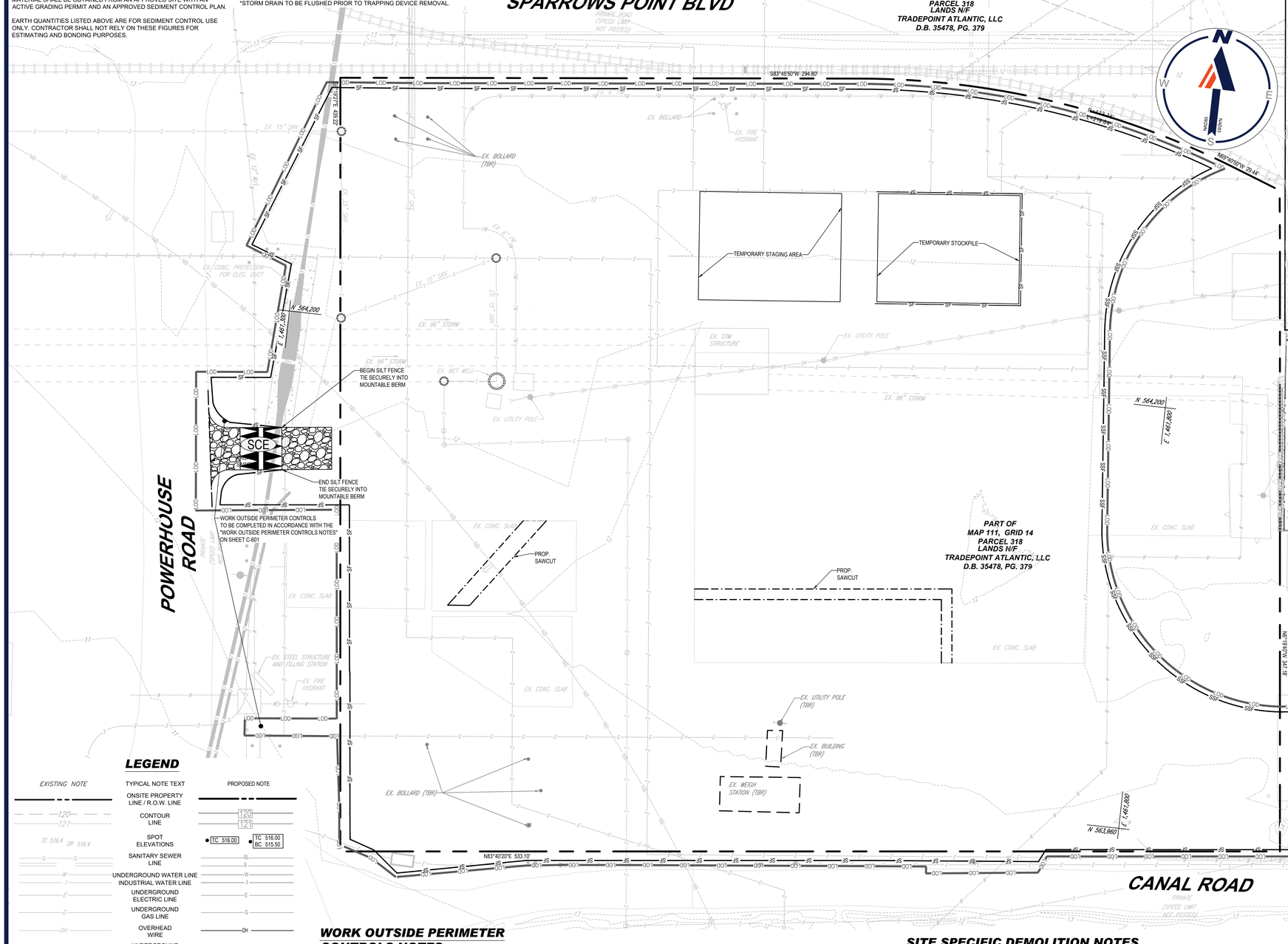
ALL INLET PROTECTION WILL BE INSTALLED AS DIRECTED BY THE INSPECTOR IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, PAGE E-23. THE REMOVAL OF ANY INLET PROTECTION DEVICES WILL REQUIRE APPROVAL FROM THE INSPECTOR.

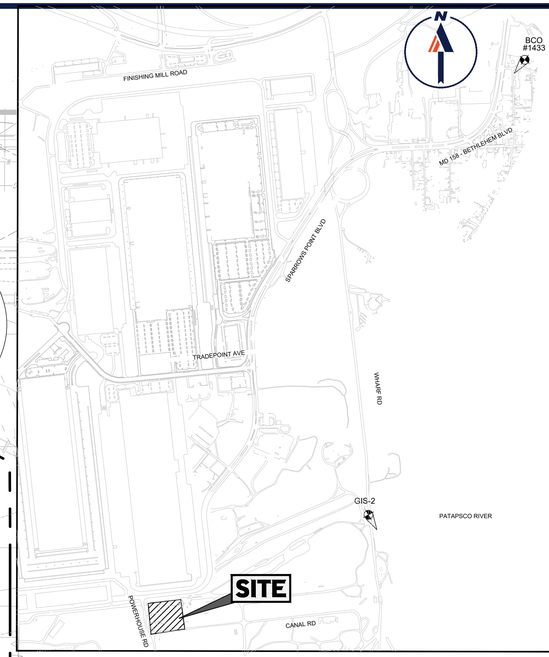
*STORM DRAIN TO BE FLUSHED PRIOR TO TRAPPING DEVICE REMOVAL.

SOILS INFORMATION					
SYMBOL	NAME	SLOPE	STRUCTURAL LIMITATIONS	HYDROLOGIC GROUP	K VALUE > 0.35
UuB	URBAN LAND-UDORTHENTS COMPLEX	0% TO 8%	NOT RATED	D	NA

SOIL STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.





LOCATION MAP

COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=1000'

BENCHMARK INFORMATION

ELEVATIONS ARE BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER THE FOLLOWING MONUMENTS:

BCO# 1433 (CAPPED REBAR)
N 571,683.79, E 1,466,230.69, ELEV. 16.59
IN MEDIAN OF NORTH POINT BLVD SOUTH OF NORTH SNYDER AVE.

GIS #2 (BRASS DISK)
N 565,182.39, E. 1,464,480.72, ELEV. 9.95
EAST SIDE OF WHARF ROAD 408'± NORTH OF LIGHT TOWER

STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
STABILIZED STONE CONSTRUCTION ENTRANCE	SCE	
MOUNTABLE BERM	MB	
SILT FENCE	SF	SF
AT GRADE INLET PROTECTION	AGIP	
LIMITS OF DISTURBANCE		LOD
SOIL STABILIZATION MATTING		
GABION INLET PROTECTION	GIP	

LEGEND

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
	ONSITE PROPERTY LINE / R.O.W. LINE	
120 / 121	CONTOUR LINE	120 / 121
TC 516.4 OR 516.4	SPOT ELEVATIONS	TC 516.00 / TC 516.00 BC 515.50
S	SANITARY SEWER LINE	SL
W	UNDERGROUND WATER LINE / INDUSTRIAL WATER LINE	W / I
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
	STORM SEWER	
FM	SANITARY SEWER FORCE MAIN	FM
	LIMIT OF DISTURBANCE	LOD
NB	IDA CRITICAL AREA BOUNDARY	
	CONCRETE CURB & GUTTER	CURB AND GUTTER / SPILL CURB

WORK OUTSIDE PERIMETER CONTROLS NOTES

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY. STABILIZATION SHALL BE AS FOLLOWS:
1. FOR AREA TO BE PAVED, THE APPLICATION OF STONE BASE
2. FOR AREAS TO BE VEGETATIVELY STABILIZED
   a. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES
   b. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON THE DOWN SLOPE SIDE.

WORK TO BE COMPLETED OUTSIDE THE SEDIMENT CONTROL MEASURES SHALL BE DONE PER THE "WORK OUTSIDE PERIMETER CONTROLS NOTES" AND "UTILITY NOTES" ON THIS SHEET.

30 15 7.5 0 30
1"= 30'

NOTE TO CONTRACTOR:

EROSION/SEDIMENT CONTROL WILL BE STRICTLY ENFORCED.

SITE SPECIFIC DEMOLITION NOTES

1. ADDITIONAL EXISTING UTILITIES OR EXISTING FEATURES LOCATED WITHIN THE LIMIT OF DISTURBANCE NOT IDENTIFIED AS "TO BE REMOVED" OR "TO BE RELOCATED" MAY REQUIRE REMOVAL OR RELOCATION AS DIRECTED BY THE GEOTECHNICAL ENGINEER OR TRADEPOINT DEVELOPMENT.
2. EXISTING UTILITIES NOTED AS "TO REMAIN" WITHIN THE LIMIT OF DISTURBANCE MUST BE MAINTAINED TO PROVIDE SERVICE FOR THE PROPOSED DEVELOPMENT.
3. THE LOCATION OF ALL UTILITIES SHOWN ARE APPROXIMATE BASED ON BETHLEHEM STEEL RECORD DRAWINGS (BS#), BALTIMORE COUNTY RECORD DRAWINGS (DWG #), AND THE AERIAL SURVEY CAD FILES NOTED ON THE COVER SHEET. THE CONTRACTOR IS ADVISED EXCAVATION MAY BE NECESSARY.

OWNER/DEVELOPER

TRADEPOINT ATLANTIC, LLC
6995 BETHLEHEM BOULEVARD
SPARROWS POINT, MD 21219
CONTACT: LUKE KLUTTZ
PHONE: 443-909-9617

REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105

BY _____ DATE _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

E&S 2 OF 7

LIMIT OF DISTURBANCE: 225,604 S.F. OR 5.18 AC.

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PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
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MMM MAINTENANCE FACILITY

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SHEET TITLE:

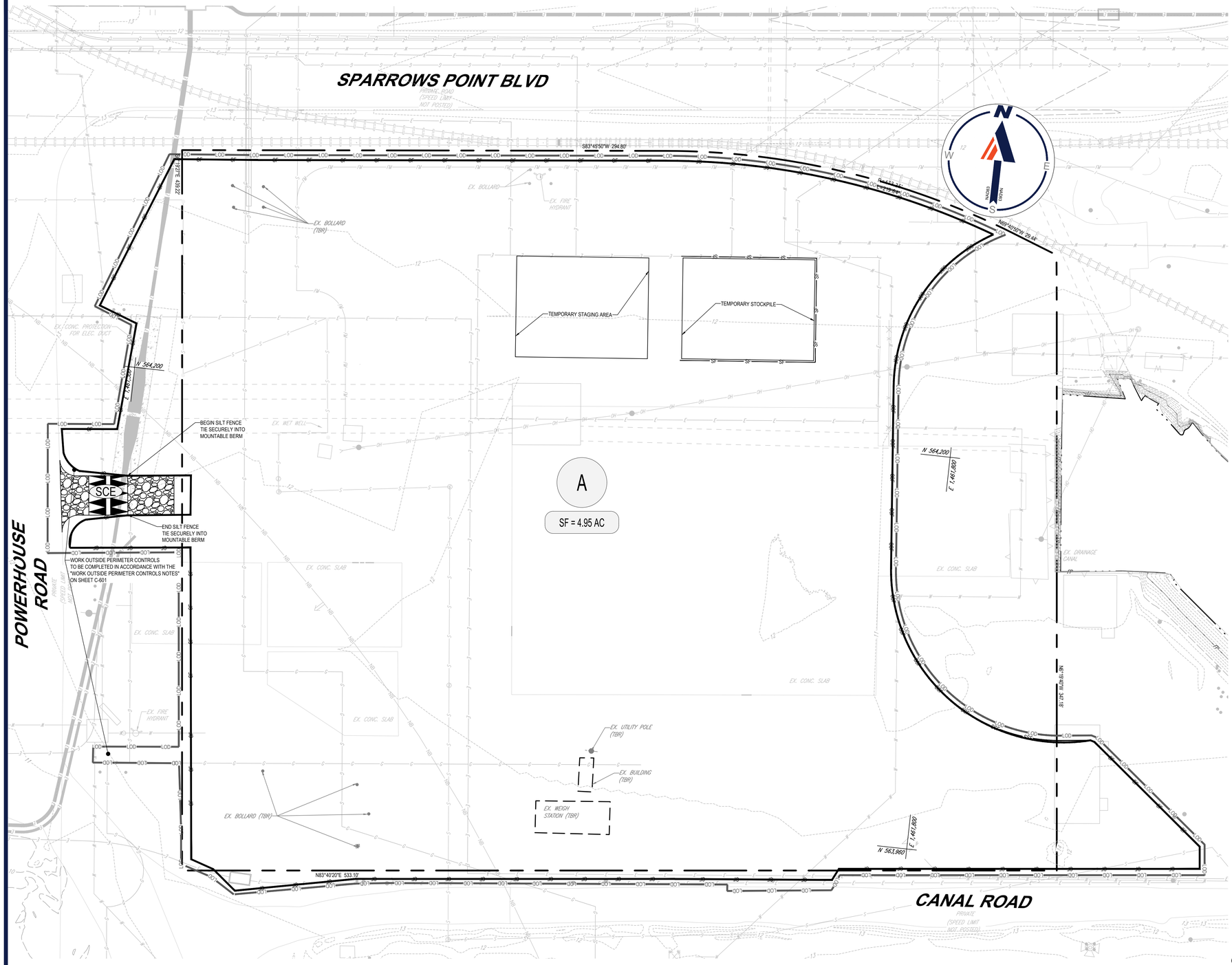
PHASE I EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER:

C-601

MDE PROJECT NO. 22-SF-0193

Aug 11, 2022
H:\2022\MDA220044.00\CAD\DRAWINGS\PLAN SETS\CONSTRUCTION DOCUMENTS\MDA220044.00 - EROS—LAYOUT C-601 PHASE I EROSION AND SEDIMENT CONTROL PLAN



SOILS INFORMATION					
SYMBOL	NAME	SLOPE	STRUCTURAL LIMITATIONS	HYDROLOGIC GROUP	K VALUE > 0.35
UuB	URBAN LAND-UDORTHENTS COMPLEX	0% TO 8%	NOT RATED	D	NA

NOTE TO CONTRACTOR:

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1"= 30'

REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105

BY DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT

E&S 3 OF 7

LIMIT OF DISTURBANCE: 225,604 S.F. OR 5.18 AC.

BOHLER
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SHEET TITLE:

PHASE I EROSION AND SEDIMENT CONTROL DRAINAGE AREA MAP

SHEET NUMBER:

C-602

MDE PROJECT NO. 22-SF-0193

TEMPORARY STOCKPILE NOTES

TEMPORARY STOCKPILES SHALL BE:

1. LOCATED WITHIN THE LIMIT OF DISTURBANCE (LOD).
2. DRAIN TO A FUNCTIONING SEDIMENT CONTROL DEVICE.
3. POSITIONED TO NOT IMPEDE UPON, OR IMPAIR THE FUNCTION OF SAID DEVICE.
4. POSITIONED TO NOT ALTER DRAINAGE DIVIDES.

THESE ITEMS SHOULD BE INCORPORATED INTO ANY NOTE REFERENCING TEMPORARY STOCKPILES, AND WHEN ACTUALLY DELINEATING THEM ON PLAN VIEWS.

SAME DAY STABILIZATION NOTES

1. WHERE NO SCE IS PROVIDED, THE CONTRACTOR SHALL DESIGNATE PIECES OF CONSTRUCTION EQUIPMENT THAT SHALL BE ALLOWED WITHIN THE LOD. THIS EQUIPMENT SHALL BE KEPT WITHIN THE LOD UNTIL THE PROPOSED WORK IS COMPLETE AND SHALL HAVE TREADS/TIRES CLEANED PRIOR TO LEAVING THE LOD. ALL MATERIAL REMOVAL/LOAD OUT SHALL BE LIFTED FROM THE LOD.
2. THE WORK SHOWN IN THIS AREA SHALL BE DONE USING THE METHOD OF 'SAME DAY STABILIZATION.' NO MORE LAND AREA (OR LENGTH OF TRENCH, SWALE, CHANNEL, ETC.) SHALL BE DISTURBED THAN CAN BE STABILIZED BY THE END OF THE WORKDAY. ALL DISTURBED AREAS THAT DO NOT DRAIN TO A SEDIMENT CONTROL DEVICE SHALL BE STABILIZED BY THE END OF THE WORKDAY. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN MDE APPROVED SEDIMENT CONTROL DEVICE. FOR WORK ACTIVITIES IN PAVED AREAS, THE STONE BASE COURSE LAYER MUST BE PLACED BY THE END OF THE SAME DAY TO QUALIFY AS SAME DAY STABILIZATION.

MAINTENANCE NOTE

CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SEDIMENT CONTROL MEASURES AND DEVICES AFTER EVERY STORM EVENT. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEEDED TO ENSURE PROPER FUNCTION. SUPER SILT FENCE STORAGE AREAS SHALL BE DEWATERED AND SEDIMENT CLEANED OUT AFTER EVERY STORM EVENT.

SOILS INFORMATION					
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NOTE TO CONTRACTOR:

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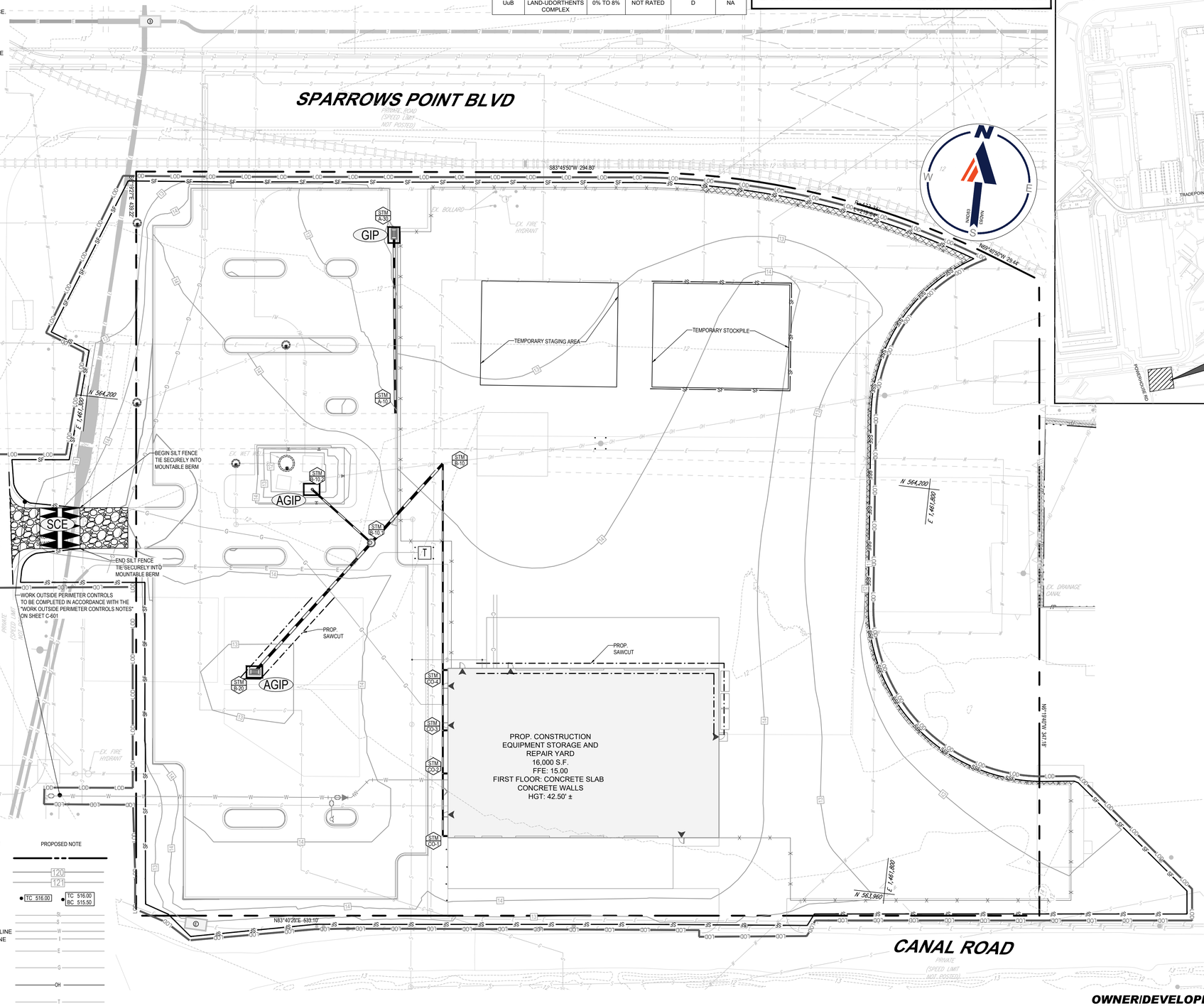
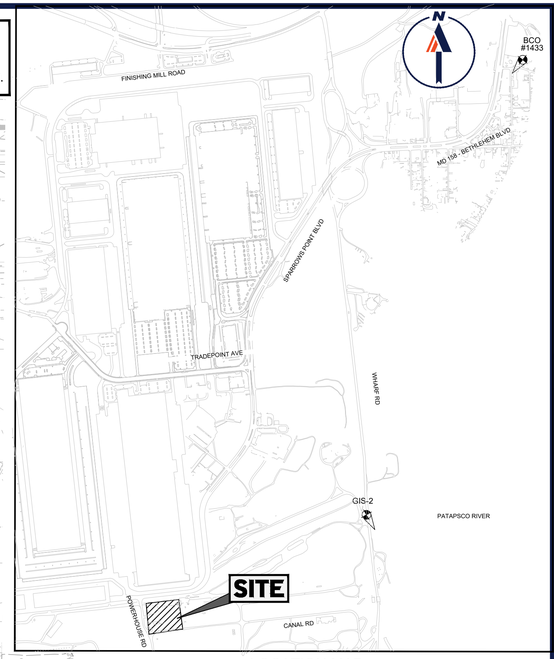


LEGEND

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
	ONSITE PROPERTY LINE / R.O.W. LINE	
120 / 121	CONTOUR LINE	120 / 121
TC 516.4 OR 516.4	SPOT ELEVATIONS	TC 516.00 / TC 516.00 BC 515.50
SS	SANITARY SEWER LINE	SS
W	UNDERGROUND WATER LINE	W
I	INDUSTRIAL WATER LINE	I
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
	STORM SEWER	
FM	SANITARY SEWER FORCE MAIN	FM
	LIMIT OF DISTURBANCE	LOD LOD
NB NB	IDA CRITICAL AREA BOUNDARY	
	CONCRETE CURB & GUTTER	CURB AND GUTTER / SPILL CURB



LOCATION MAP

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SCALE: 1"=1000'

BENCHMARK INFORMATION

ELEVATIONS ARE BASED ON NAVD 88. COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER THE FOLLOWING MONUMENTS:

BCO# 1433 (CAPPED REBAR)
N 571,683.79, E 1,466,230.69, ELEV. 16.59
IN MEDIAN OF NORTH POINT BLVD SOUTH OF NORTH SNYDER AVE.

GIS #2 (BRASS DISK)
N 565,182.39, E 1,464,480.72, ELEV. 9.95
EAST SIDE OF WHARF ROAD 408'± NORTH OF LIGHT TOWER

STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
STABILIZED STONE CONSTRUCTION ENTRANCE	SCE	
MOUNTABLE BERM	MB	
SILT FENCE	SF	SF
AT GRADE INLET PROTECTION	AGIP	
LIMITS OF DISTURBANCE		LOD
SOIL STABILIZATION MATTING		
GABION INLET PROTECTION	GIP	

OWNER/DEVELOPER

TRADEPOINT ATLANTIC, LLC
6995 BETHLEHEM BOULEVARD
SPARROWS POINT, MD 21219
CONTACT: LUKE KLUTTZ
PHONE: 443-909-9617

30 15 7.5 0 30
1"= 30'

REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105

BY DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT

E&S 4 OF 7

LIMIT OF DISTURBANCE: 225,604 S.F. OR 5.18 AC.

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
STRUCTURAL ENGINEERING
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY
1	7/20/22	REV. PER CLIENT COMMENTS	DMD / RMS
2	8/11/22	REV. PER CLIENT COMMENTS	DMD / RMS

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PROJECT No.:	MDA220044.00
DRAWN BY:	DMD
CHECKED BY:	MJG
DATE:	05/16/2022
CAD I.D.:	MDA220044.00 - EROS

PROJECT:

CONSTRUCTION DOCUMENTS

FOR

TRADEPOINT ATLANTIC

MMM MAINTENANCE FACILITY

1331 POWERHOUSE ROAD
BALTIMORE, MD 21219
TM 111, GRID 14, PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

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901 DULANEY VALLEY ROAD, SUITE 801
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R.M. STASIOWSKI
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 49425
PROFESSIONAL CERTIFICATION
I, RYAN M. STASIOWSKI, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49425, EXPIRATION DATE: 6/9/2024

SHEET TITLE:

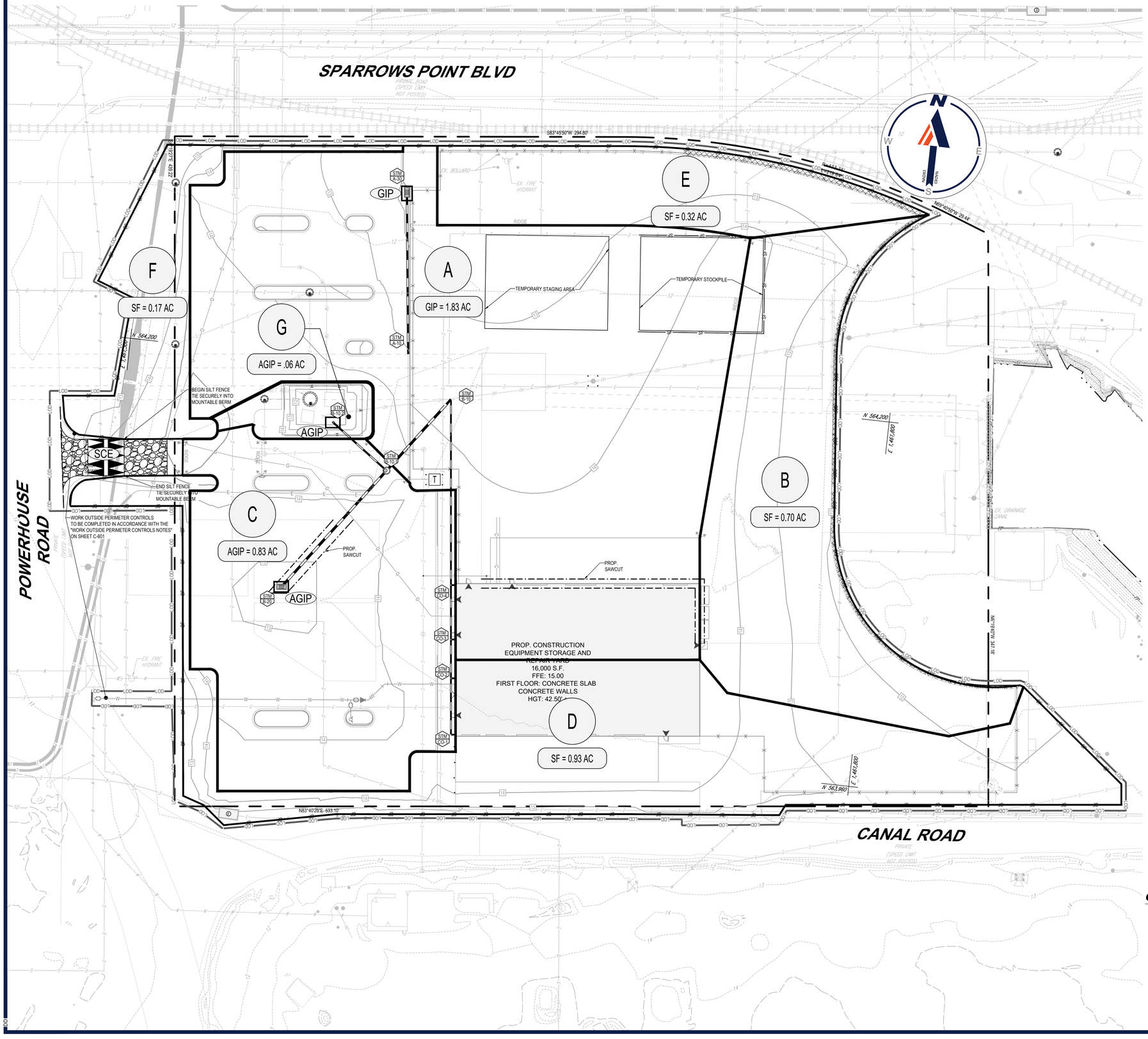
PHASE II EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER:

C-603

MDE PROJECT NO. 22-SF-0193

Aug 11, 2022
H:\2022\MDA220044.00\CAD\DRAWINGS\PLAN SETS\CONSTRUCTION DOCUMENTS\MDA220044.00 - EROS---LAYOUT C-603 PHASE II EROSION AND SEDIMENT CONTROL PLAN



SOILS INFORMATION					
SYMBOL	NAME	SLOPE	STRUCTURAL LIMITATIONS	HYDROLOGIC GROUP	K VALUE > 0.35
UuB	URBAN LAND-UDORTHENTS COMPLEX	0% TO 8%	NOT RATED	D	NA

NOTE TO CONTRACTOR:

EROSION/SEDIMENT CONTROL WILL BE STRICTLY ENFORCED.

OWNER/DEVELOPER

TRADEPOINT ATLANTIC, LLC
6995 BETHLEHEM BOULEVARD
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PHONE: 443-909-9617

30 15 7.5 0 30
1"= 30'

REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105

BY DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT

E&S 5 OF 7

LIMIT OF DISTURBANCE: 225,604 S.F. OR 5.18 AC.

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABILITY DESIGN
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PROJECT:

CONSTRUCTION DOCUMENTS

FOR

TRADEPOINT ATLANTIC

MMM MAINTENANCE FACILITY

1331 POWERHOUSE ROAD
BALTIMORE, MD 21219
TM 111, GRID 14, PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
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901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
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Fax: (410) 821-7987
JBASS@BOHLERENG.COM

R.M. STASIOWSKI
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 49425

PROFESSIONAL CERTIFICATION
I, RYAN M. STASIOWSKI, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49425, EXPIRATION DATE: 6/9/2024

SHEET TITLE:

PHASE II EROSION AND SEDIMENT CONTROL DRAINAGE AREA MAP

SHEET NUMBER:

C-604

MDE PROJECT NO. 22-SF-0193

Aug 11, 2022
H:\2022\MDA220044.00\CAD\BKWINGS\PLAN SETS\CONSTRUCTION DOCUMENTS\MDA220044.00 - EROS—LAYOUT C-604 PHASE II DRAINAGE AREA MAP

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION
USING VEGETATION AS COVER TO PROTECT EXPOSED SOIL FROM EROSION.

PURPOSE
TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL.

CONDITIONS WHERE PRACTICE APPLIES
ON ALL DISTURBED AREAS NOT STABILIZED BY OTHER METHODS. THIS SPECIFICATION IS DIVIDED INTO SECTIONS ON INCREMENTAL STABILIZATION; SOIL PREPARATION, SOIL AMENDMENTS AND TOPSOILING; SEEDING AND MULCHING; TEMPORARY STABILIZATION; AND PERMANENT STABILIZATION.

EFFECTS ON WATER QUALITY AND QUANTITY
STABILIZATION PRACTICES ARE USED TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL. WHEN SOIL IS STABILIZED WITH VEGETATION, THE SOIL IS LESS LIKELY TO ERODE AND MORE LIKELY TO ALLOW INFILTRATION OF RAINFALL, THEREBY REDUCING SEDIMENT LOADS AND RUNOFF TO DOWNSTREAM AREAS.
PLANTING VEGETATION IN DISTURBED AREAS WILL HAVE AN EFFECT ON THE WATER BUDGET, ESPECIALLY ON VOLUMES AND RATES OF RUNOFF, INFILTRATION, EVAPORATION, TRANSPIRATION, PERCOLATION, AND GROUNDWATER RECHARGE. OVER TIME, VEGETATION WILL INCREASE ORGANIC MATTER CONTENT AND IMPROVE THE WATER HOLDING CAPACITY OF THE SOIL AND SUBSEQUENT PLANT GROWTH.
VEGETATION WILL HELP REDUCE THE MOVEMENT OF SEDIMENT, NUTRIENTS, AND OTHER CHEMICALS CARRIED BY RUNOFF TO RECEIVING WATERS. PLANTS WILL ALSO HELP PROTECT GROUNDWATER SUPPLIES BY ASSIMILATING THOSE SUBSTANCES PRESENT WITHIN THE ROOT ZONE.
SEDIMENT CONTROL PRACTICES MUST REMAIN IN PLACE DURING GRADING, SEEDBED PREPARATION, SEEDING, MULCHING, AND VEGETATIVE ESTABLISHMENT.

ADEQUATE VEGETATIVE ESTABLISHMENT
INSPECT SEEDED AREAS FOR VEGETATIVE ESTABLISHMENT AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.
1. ADEQUATE VEGETATIVE STABILIZATION REQUIRES 95 PERCENT GROUNDCOVER.
2. IF AN AREA HAS LESS THAN 40 PERCENT GROUNDCOVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUNDCOVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED.
4. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDING ARE SHOWN IN TABLE B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

DEFINITION
ESTABLISHMENT OF VEGETATIVE COVER ON CUT AND FILL SLOPES.

PURPOSE
TO PROVIDE TIMELY VEGETATIVE COVER ON CUT AND FILL SLOPES AS WORK PROGRESSES.

CONDITIONS WHERE PRACTICE APPLIES
ANY CUT OR FILL SLOPE GREATER THAN 15 FEET IN HEIGHT. THIS PRACTICE ALSO APPLIES TO STOCKPILES.

CRITERIA
A. INCREMENTAL STABILIZATION - CUT SLOPES
1. EXCAVATE AND STABILIZE CUT SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL CUT SLOPES AS THE WORK PROGRESSES.
2. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.1):
   a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO CONVEY RUNOFF AROUND THE EXCAVATION.
   b. PERFORM PHASE 1 EXCAVATION, PREPARE SEEDBED, AND STABILIZE.
   c. PERFORM PHASE 2 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.
   d. PERFORM FINAL PHASE EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

NOTE: ONCE EXCAVATION HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

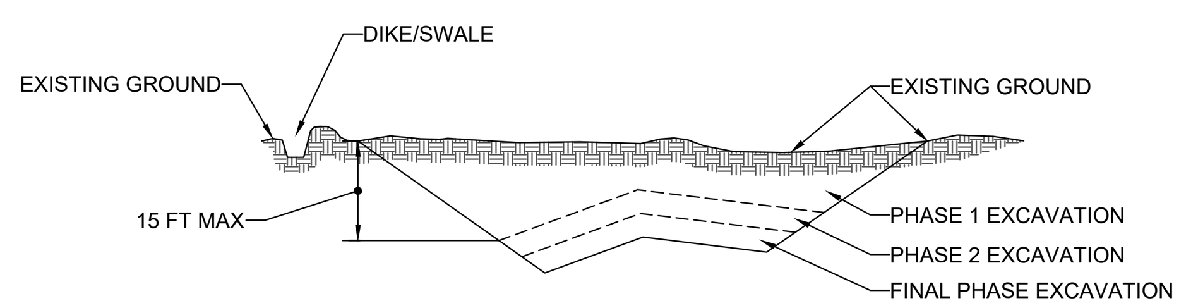

FIGURE B.1: INCREMENTAL STABILIZATION - CUT

B. INCREMENTAL STABILIZATION - FILL SLOPES
1. CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL SLOPES AS THE WORK PROGRESSES.
2. STABILIZE SLOPES IMMEDIATELY WHEN THE VERTICAL HEIGHT OF A LIFT REACHES 15 FEET, OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS.
3. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
4. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.2):
   a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL. CONSTRUCT SILT FENCE ON LOW SIDE OF FILL UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA.
   b. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
   c PLACE PHASE 1 FILL, PREPARE SEEDBED, AND STABILIZE.
   d. PLACE PHASE 2 FILL, PREPARE SEEDBED, AND STABILIZE.
   e. PLACE FINAL PHASE FILL, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

NOTE: ONCE THE PLACEMENT OF FILL HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

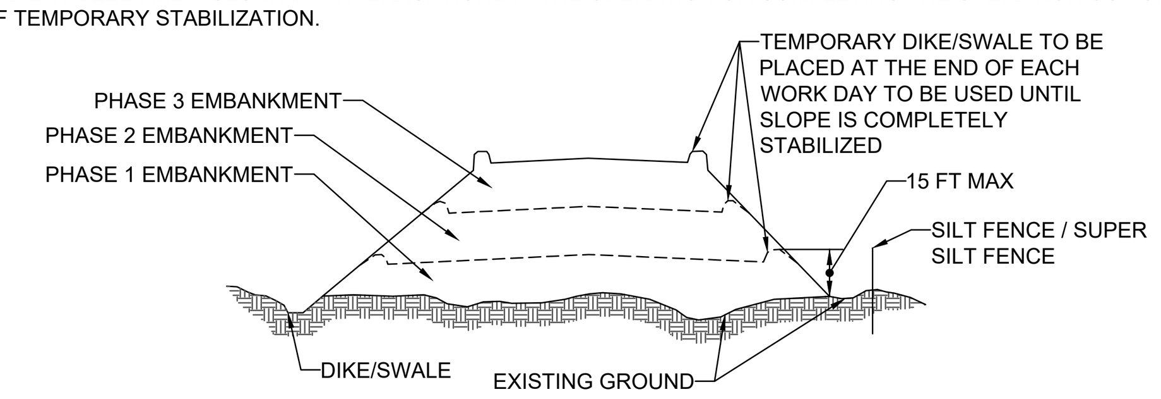

FIGURE B.2: INCREMENTAL STABILIZATION - FILL

B-4-2 STANDARDS AND SPECIFICATIONS FOR FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

DEFINITION
THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES
WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA
A. SOIL PREPARATION
1. TEMPORARY STABILIZATION
   a. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
   b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
   c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
2. PERMANENT STABILIZATION
   a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
   i. SOIL PH BETWEEN 6.0 AND 7.0.
   ii. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
   iii. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
   iv. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
   v. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
   b. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
   c. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.
   d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
   e. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

B. TOPSOILING
1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
2. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
   a. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
   b. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
   c. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
   d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
   a. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1½ INCHES IN DIAMETER.
   b. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
   c. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL
6. TOPSOIL APPLICATION
   a. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
   b. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
   c. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.
3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.
4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION
THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE
TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES
TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA
A. SEEDING
1. SPECIFICATIONS
   a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
   b. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.
   c. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
   d. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.
2. APPLICATION
   a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
   i. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
   ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
   b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
   i. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
   ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
   c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
   i. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE; K2O (POTASSIUM), 200 POUNDS PER ACRE.
   ii. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
   iii. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
   iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

B. MULCHING
1. MULCH MATERIALS (IN ORDER OF PREFERENCE)
   a. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
   b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
   i. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.
   ii. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
   iii. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
   iv. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
   v. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.
2. APPLICATION
   a. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
   b. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.
   c. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
3. ANCHORING
   a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
   i. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
   ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
   iii. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.
   iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (from Figure B.3): ZONES 7A/7B SEED MIXTURE (from Table B.1)					FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
COOL SEASON GRASSES						
1	ANNUAL RYEGRASS	40	2/15 - 4/30 8/15 - 11/30	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
2	BARLEY	96	2/15 - 4/30 8/15 - 11/30	1"		
3	OATS	72	2/15 - 4/30 8/15 - 11/30	1"		
4	WHEAT	120	2/15 - 4/30 8/15 - 11/30	1"		
5	CEREAL RYE	112	2/15 - 4/30 8/15 - 12/15	1"		
WARM SEASON GRASSES						
6	FOXTAIL MILLET	30	5/1 - 8/14	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
7	PEARL MILLET	20	5/1 - 8/14	0.5"		

1. SEEDING RATES FOR THE WARM-SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ACTUAL PLANTING RATES SHALL BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES.

SEEDING RATES LISTED ABOVE ARE FOR TEMPORARY SEEDINGS, WHEN PLANTED ALONE. WHEN PLANTED AS A NURSE CROP WITH PERMANENT SEED MIXES, USE 1/3 OF THE SEEDING RATE LISTED ABOVE FOR BARLEY, OATS, AND WHEAT. FOR SMALLER-SEEDED GRASSES (ANNUAL RYEGRASS, PEARL MILLET, FOXTAIL MILLET), DO NOT EXCEED MORE THAN 5% (BY WEIGHT) OF THE OVERALL PERMANENT SEEDING MIX. CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP, UNLESS PLANTING WILL OCCUR IN VERY LATE FALL BEYOND THE SEEDING DATES FOR OTHER TEMPORARY SEEDINGS. CEREAL RYE HAS ALLELOPATHIC PROPERTIES THAT INHIBIT THE GERMINATION AND GROWTH OF OTHER PLANTS. IF IT MUST BE USED AS A NURSE CROP, SEED AT 1/3 OF THE RATE LISTED ABOVE.

OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES.

2. FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.

3. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE
TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA
1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE
TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA
A. SEED MIXTURES
1. GENERAL USE
   a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
   b. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
   c. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
   d. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 ½ POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY .
2. TURFGRASS MIXTURES
   a. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
   b. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
   i. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
   ii. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
   iii. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES; CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
   iv. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES; CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1½ TO 3 POUNDS PER 1000 SQUARE FEET.
   NOTES:
   SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND"
   CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE
   c. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES
   WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A)
   CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B)
   SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)
   d. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1½ INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
   e. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (½ TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

PERMANENT SEEDING SUMMARY

HARDINESS ZONE (from Figure B.3): ZONE 7A SEED MIXTURE (from Table B.3)					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	*SEEDING DATES	SEEDING DEPTHS	N	P2O5	K2O	
9	TALL FESCUE KENTUCKY BLUEGRASS PERENNIAL RYE GRASS	60 40 20	2/15 - 4/30 8/15 - 10/31	1/4" - 1/2"	45 LB/AC (1.0 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
5	HARD FESCUE PERENNIAL RYE GRASS FLAT PEA	20 10 15	3/1 - 5/15 8/1 - 10/15	1/4" - 1/2"				
1	SWITCH GRASS CREEPING RED FESCUE PARTRIDGE PEA	10 15 4	2/15 - 5/31	1/4" - 1/2"				

NOTES:
1. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE. THESE DATES MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONES. WHEN SEEDING TOWARD THE END OF THE LISTED PLANTING DATES, OR WHEN CONDITIONS ARE EXPECTED TO BE LESS THAN OPTIMAL, SELECT AN APPROPRIATE NURSE CROP FROM TABLE B.1 TEMPORARY SEEDING FOR SITE STABILIZATION AND PLANT TOGETHER WITH THE PERMANENT SEEDING MIX.
2. WHEN PLANTED DURING THE GROWING SEASON, MOST OF THESE MATERIALS MUST BE PURCHASED AND KEPT IN A DORMANT CONDITION UNTIL PLANTING. BARE-ROOT GRASSES ARE THE EXCEPTION—THEY MAY BE SUPPLIED AS GROWING (NON-DORMANT) PLANTS.
♦ ADDITIONAL PLANTING DATES FOR THE LOWER COASTAL PLAIN, DEPENDENT ON ANNUAL RAINFALL AND TEMPERATURE TRENDS. RECOMMEND ADDING A NURSE CROP, AS NOTED ABOVE, IF PLANTING DURING THIS PERIOD.
♦♦WARM-SEASON GRASSES NEED A SOIL TEMPERATURE OF AT LEAST 50 DEGREES F IN ORDER TO GERMINATE. IF SOIL TEMPERATURES ARE COLDER THAN 50 DEGREES, OR MOISTURE IS NOT ADEQUATE, THE SEEDS WILL REMAIN DORMANT UNTIL CONDITIONS ARE FAVORABLE. IN GENERAL, PLANTING DURING THE LATTER PORTION OF THIS PERIOD ALLOWS MORE TIME FOR WEED EMERGENCE AND WEED CONTROL PRIOR TO PLANTING. WHEN SELECTING A PLANTING DATE, CONSIDER THE NEED FOR WEED CONTROL VS. THE LIKELIHOOD OF HAVING SUFFICIENT MOISTURE FOR LATER PLANTINGS, ESPECIALLY ON DROUGHTY SITES.
* ADDITIONAL PLANTING DATES DURING WHICH SUPPLEMENTAL WATERING MAY BE NEEDED TO ENSURE PLANT ESTABLISHMENT.
FREQUENT FREEZING AND THAWING OF WET SOILS MAY RESULT IN FROST-HEAVING OF MATERIALS PLANTED IN LATE FALL, IF PLANTS HAVE NOT SUFFICIENTLY ROOTED IN PLACE.
SOD USUALLY NEEDS 4 TO 6 WEEKS TO BECOME SUFFICIENTLY ROOTED. LARGE CONTAINERIZED AND BALLED-AND-BURLAPPED STOCK MAY BE PLANTED INTO THE WINTER MONTHS AS LONG AS THE GROUND IS NOT FROZEN AND SOIL MOISTURE IS ADEQUATE.
** FOR THE PERIOD 5/1 - 8/14 ADD EITHER FOXTAIL OR PEARL MILLET - 6 LBS/AC. TO MIX NO. 9, 2.25 LBS/AC. TO MIX NO. 5

B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).
1. GENERAL SPECIFICATIONS
   a. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
   b. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF ¾ INCH, PLUS OR MINUS ¼ INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
   c. STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
   d. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
   e. SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
2. SOD INSTALLATION
   a. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
   b. LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
   c. WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.
   d. WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS.
3. SOD MAINTENANCE
   a. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING.
   b. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
   c. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN ⅓ OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

B-4-6 STANDARDS AND SPECIFICATIONS FOR SOIL STABILIZATION MATTING

DEFINITION
MATERIAL USED TO TEMPORARILY OR PERMANENTLY STABILIZE CHANNELS OR STEEP SLOPES UNTIL GROUNDCOVER IS ESTABLISHED.

PURPOSE
TO PROTECT THE SOILS UNTIL VEGETATION IS ESTABLISHED.

CONDITIONS WHERE PRACTICE APPLIES
ON NEWLY SEEDED SURFACES TO PREVENT THE APPLIED SEED FROM WASHING OUT; IN CHANNELS AND ON STEEP SLOPES WHERE THE FLOW HAS EROSIVE VELOCITIES OR CONVEYS CLEAR WATER; ON TEMPORARY SWALES, EARTH DIKES, AND PERIMETER DIKE SWALES AS REQUIRED BY THE RESPECTIVE DESIGN STANDARD; AND, ON STREAM BANKS WHERE MOVING WATER IS LIKELY TO WASH OUT NEW VEGETATIVE PLANTINGS.

DESIGN CRITERIA
1. THE SOIL STABILIZATION MATTING THAT IS USED MUST WITHSTAND THE FLOW VELOCITIES AND SHEAR STRESSES DETERMINED FOR THE AREA, BASED ON THE 2-YEAR, 24-HOUR FREQUENCY STORM FOR TEMPORARY APPLICATIONS AND THE 10-YEAR, 24-HOUR FREQUENCY STORM FOR PERMANENT APPLICATIONS. DESIGNATE ON THE PLAN THE TYPE OF SOIL STABILIZATION MATTING USING THE STANDARD SYMBOL AND INCLUDE THE CALCULATED SHEAR STRESS FOR THE RESPECTIVE TREATMENT AREA.
2. MATTING IS REQUIRED ON PERMANENT CHANNELS WHERE THE RUNOFF VELOCITY EXCEEDS TWO AND HALF FEET PER SECOND (2.5 FPS) OR THE SHEAR STRESS EXCEEDS TWO POUNDS PER SQUARE FOOT (2 LBS/FT2). ON TEMPORARY CHANNELS DISCHARGING TO A SEDIMENT TRAPPING PRACTICE, PROVIDE MATTING WHERE THE RUNOFF VELOCITY EXCEEDS FOUR FEET PER SECOND (4 FPS).
3. TEMPORARY SOIL STABILIZATION MATTING IS MADE WITH DEGRADABLE (LASTS 6 MONTHS MINIMUM), NATURAL, OR MANMADE FIBERS OF UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND IS SMOLDER RESISTANT. THE MAXIMUM PERMISSIBLE VELOCITY FOR TEMPORARY MATTING IS 6 FEET PER SECOND.
4. PERMANENT SOIL STABILIZATION MATTING IS AN OPEN WEAVE, SYNTHETIC MATERIAL CONSISTING OF NONDEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION OF WEAVE THROUGHOUT. THE MAXIMUM PERMISSIBLE VELOCITY FOR PERMANENT MATTING IS 8.5 FEET PER SECOND.
5. CALCULATE CHANNEL VELOCITY AND SHEAR STRESS USING THE PROCEDURE OUTLINED ON PAGE B:36 OF THE MDE MANUAL.
6. USE TABLE B.7 ON PAGE B.37 OF THE MDE MANUAL TO ASSIST IN SELECTING THE APPROPRIATE SOIL STABILIZATION MATTING FOR SLOPE APPLICATIONS BASED ON THE SLOPE, THE SLOPE LENGTH, AND THE SOIL-ERODIBILITY K FACTOR.

MAINTENANCE
VEGETATION MUST BE ESTABLISHED AND MAINTAINED SO THAT THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105

BY ________ DATE ________

MARYLAND DEPARTMENT OF THE ENVIRONMENT

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY
1	7/20/22	REV. PER CLIENT COMMENTS	DMD / RMS
2	8/11/22	REV. PER CLIENT COMMENTS	DMD / RMS

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ISSUED FOR MUNICIPAL & AGENCY REVIEW & APPROVAL

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	MDA220044.00
DRAWN BY:	DMD
CHECKED BY:	MJG
DATE:	05/16/2022
CAD I.D.:	MDA220044 - CNDS

PROJECT:
CONSTRUCTION DOCUMENTS
FOR
TRADEPOINT ATLANTIC
MMM MAINTENANCE FACILITY
1331 POWERHOUSE ROAD
BALTIMORE, MD 21219
TM 111, GRID 14, PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
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R.M. STASIOWSKI
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 49425
PROFESSIONAL CERTIFICATION
I, RYAN M. STASIOWSKI, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49425, EXPIRATION DATE: 6/9/2024

SHEET TITLE:
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

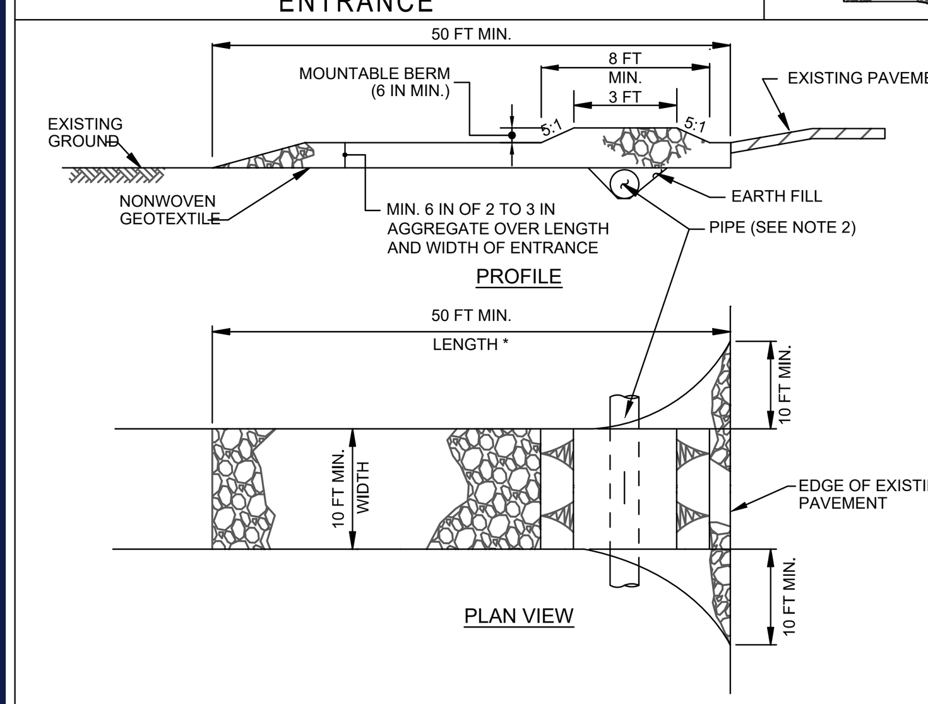
SHEET NUMBER:
C-605

MDE PROJECT NO. 22-SF-0193

Aug 11, 2022
H:\2022\MDA220044.00\CAD\DRAWINGS\PLAN SETS\CONSTRUCTION DOCUMENTS\MDA220044 - CNDS---->LAYOUT: C-605 - ESC ND
DD

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

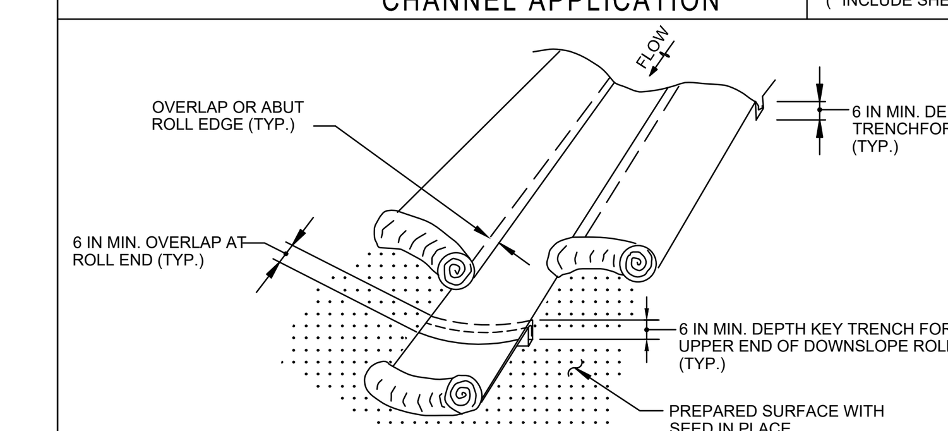
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: TSSMC - * 2.25 lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

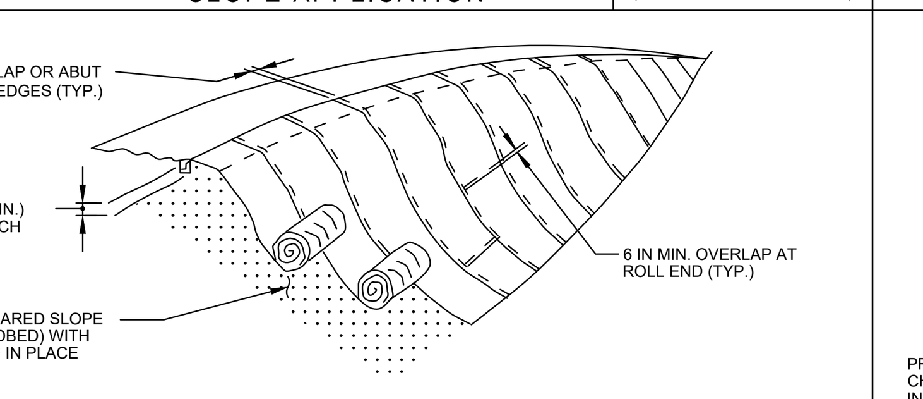
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
7. OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: TSSMS - * 2.25 lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

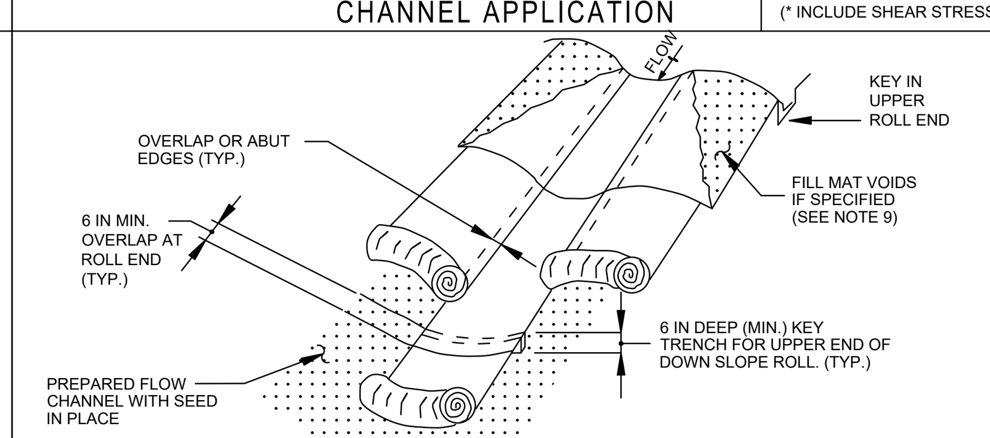
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: PSSMC - * 2.25 lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

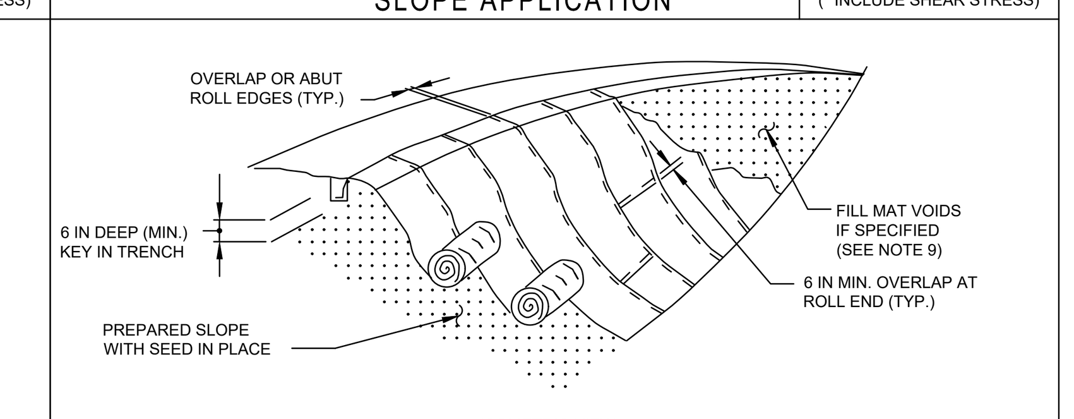
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: PSSMS - * 2.25 lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

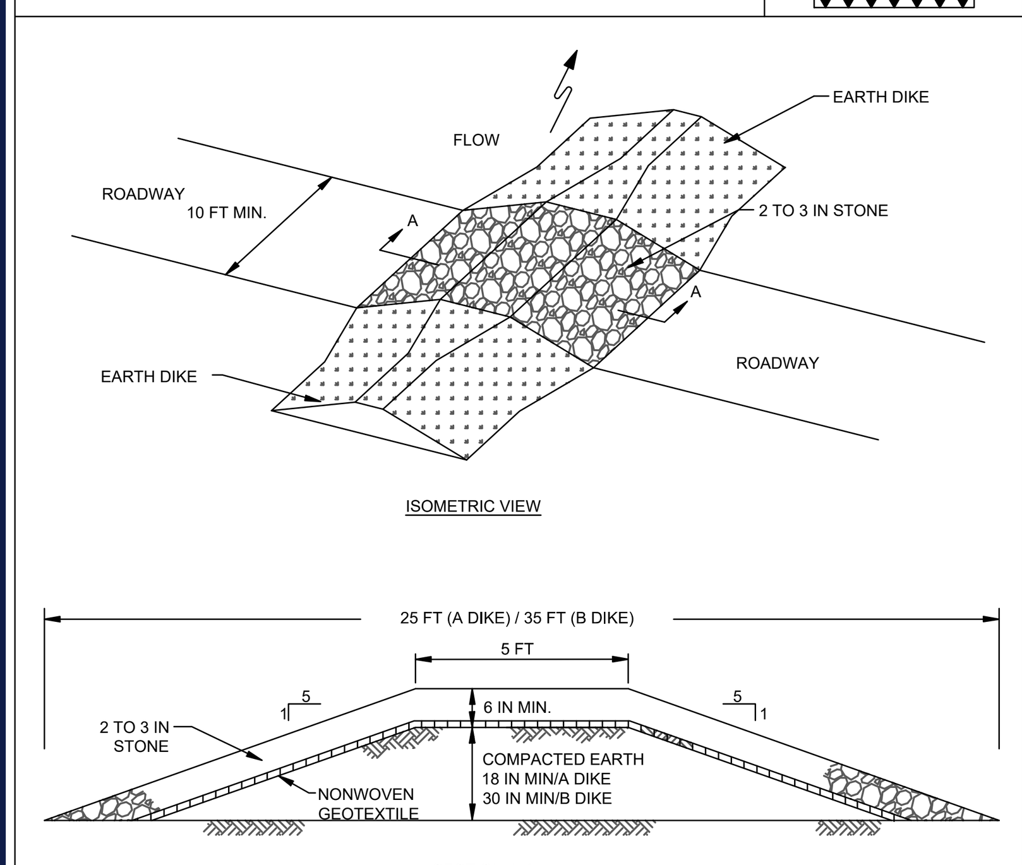
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

BALTIMORE COUNTY EROSION AND SEDIMENT CONTROL NOTES

1. REFER TO "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" FOR STANDARD DETAILS AND DETAILED SPECIFICATIONS OF EACH PRACTICE SPECIFIED HEREIN.
2. WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, MINOR FIELD ADJUSTMENTS CAN AND WILL BE MADE TO INSURE THE CONTROL OF ANY SEDIMENT. CHANGES IN SEDIMENT CONTROL PRACTICES REQUIRE PRIOR APPROVAL OF THE SEDIMENT CONTROL INSPECTOR AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE).
3. AT THE END OF EACH WORKING DAY, ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT IN OPERATIONAL CONDITION.
4. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1), AND B) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.
5. ANY CHANGE TO THE GRADING PROPOSED ON THIS PLAN REQUIRES RE-SUBMISSION TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) FOR APPROVAL.
6. DUST CONTROL WILL BE PROVIDED FOR ALL DISTURBED AREAS. REFER TO "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL," PG. H-22, FOR ACCEPTABLE METHODS AND SPECIFICATIONS FOR DUST CONTROL.
7. ANY VARIATIONS FROM THE SEQUENCE OF OPERATIONS STATED ON THIS PLAN REQUIRES THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) PRIOR TO THE INITIATION OF THE CHANGE.
8. EXCESS CUT OR BORROW MATERIAL SHALL GO TO, OR COME FROM, RESPECTIVELY, A SITE WITH AN OPEN GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN.
9. THE FOLLOWING ITEM MAY BE USED AS APPLICABLE: REFER TO "MARYLAND'S GUIDELINES TO WATERWAY CONSTRUCTION" BY THE WATER MANAGEMENT ADMINISTRATION OF THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, REVISED NOVEMBER, 2000, FOR STANDARD DETAILS AND DETAILED SPECIFICATIONS OF EACH PRACTICE SPECIFIED HEREIN FOR WATERWAY CONSTRUCTION.
10. PUMPING SEDIMENT-LADEN WATER INTO WATERS OF THE STATE IS STRICTLY PROHIBITED. ANY PORTABLE DEWATERING DEVICE MUST BE WITHIN THE LIMIT OF DISTURBANCE.
11. UPON INSTALLATION OF THE BASE PAVEMENT AND AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR, RELOCATE THE STABILIZED CONSTRUCTION ENTRANCE(S) AND INSTALL ADDITIONAL CONTROL MEASURES (STABILIZED CONSTRUCTION ENTRANCES, SILT FENCES, SUPER SILT FENCES) AS NEEDED TO CONTROL SEDIMENT RUNOFF FROM DISTURBED AREAS. THE ADDITIONAL CONTROLS MUST NOT ALTER DRAINAGE PATTERNS.

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL: MB



CONSTRUCTION SPECIFICATIONS

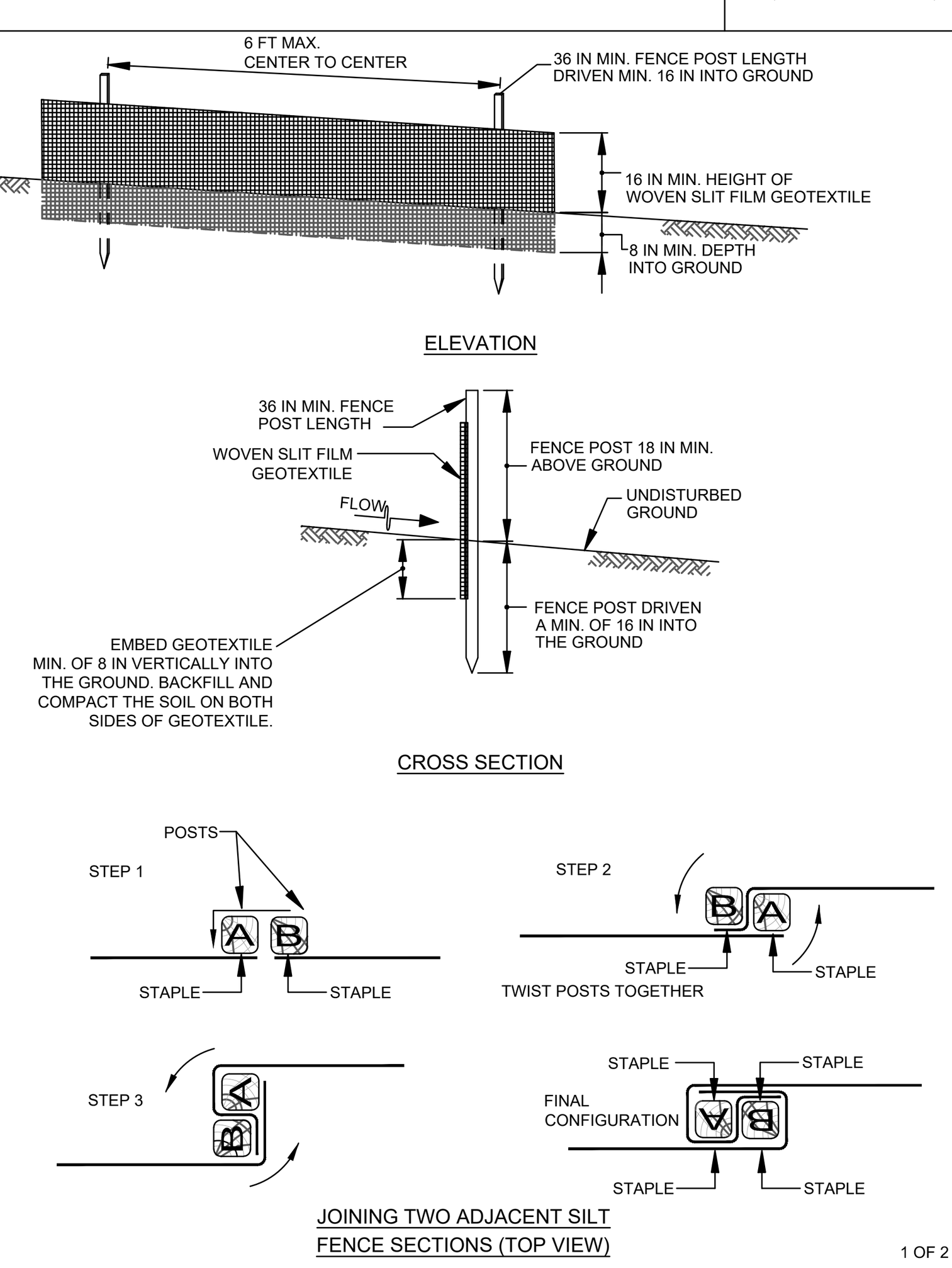
1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1/16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

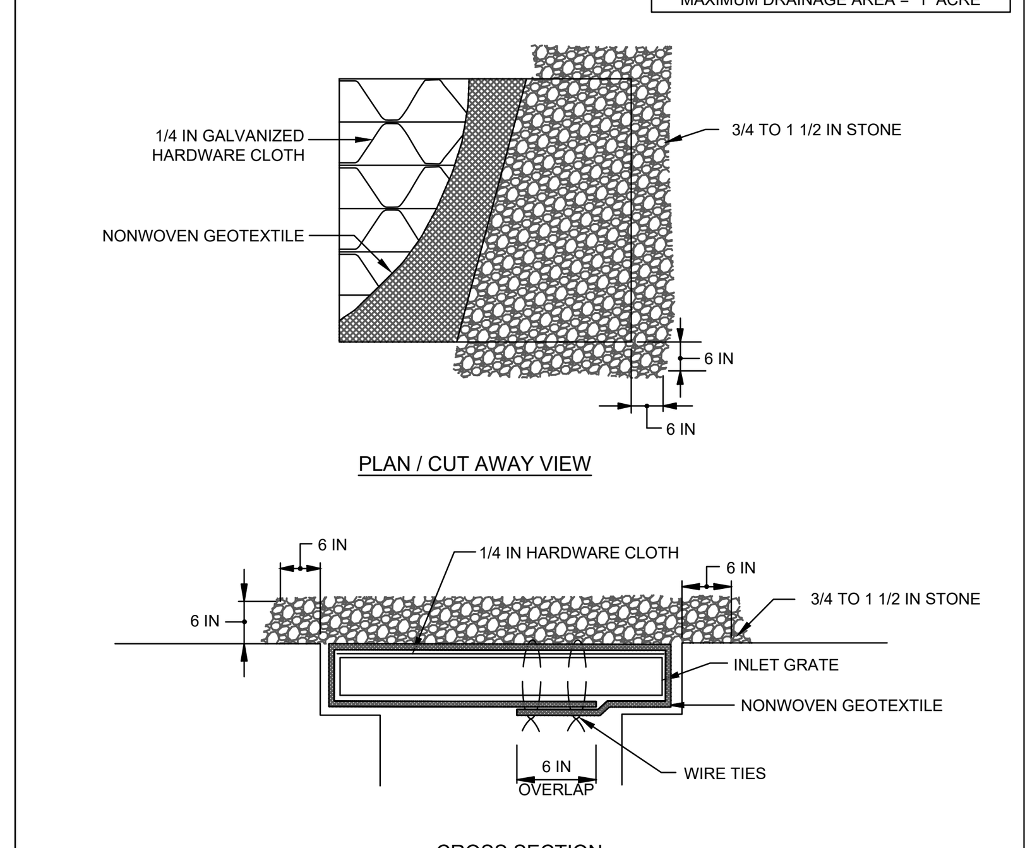
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

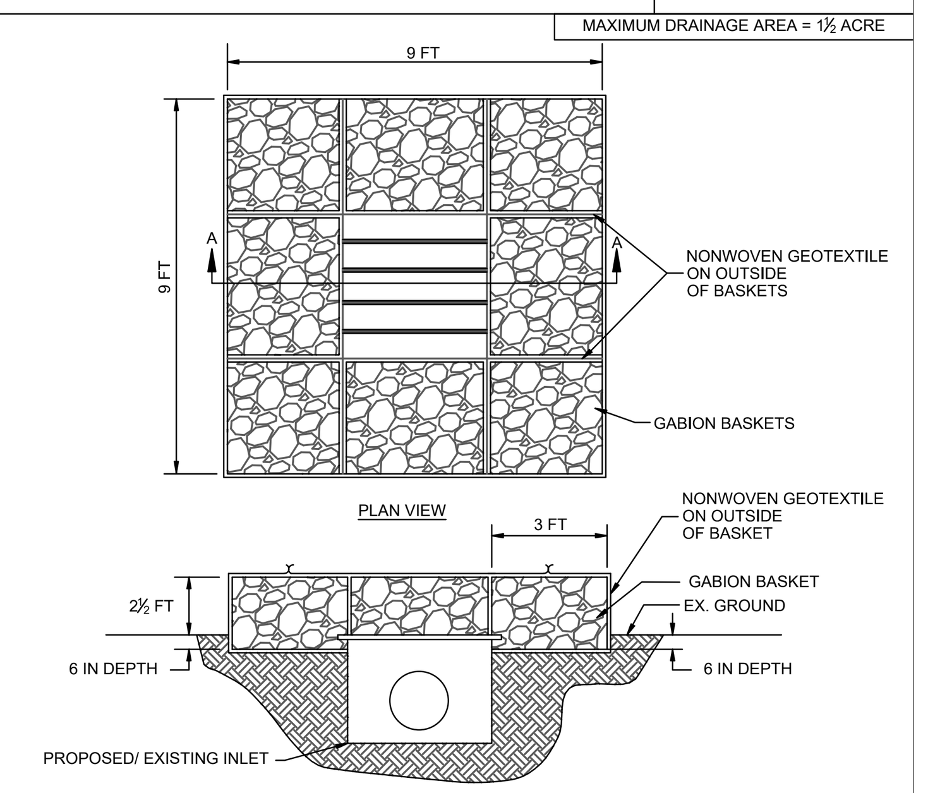
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-7 GABION INLET PROTECTION

STANDARD SYMBOL: GIP

MAXIMUM DRAINAGE AREA = 1½ ACRE



CONSTRUCTION SPECIFICATIONS

1. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
2. WRAP 3 FEET x 3 FEET GABION BASKETS (LENGTH VARIABLE) WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVERLAPPING AT THE TOP AND FASTEN THE GEOTEXTILE AT THE TOP OF THE BASKET WITH WIRE FASTENERS (HOG RINGS) AT A MAXIMUM OF 1 FOOT INTERVALS ALONG THE SEAM.
3. AVOID TEARING OR DAMAGING GEOTEXTILE.
4. ENTRENCH GABION BASKETS TO A DEPTH OF 6 INCHES.
5. PLACE AND INTERLOCK GABION BASKETS WITH NO GAPS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR MESH.
7. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

H-1 STANDARDS AND SPECIFICATIONS FOR MATERIALS

Table H.1: Geotextile Fabrics

		WOVEN SLIT FILM GEOTEXTILE		WOVEN MONOFILAMENT GEOTEXTILE		NONWOVEN GEOTEXTILE	
		MINIMUM AVERAGE ROLL VALUE[1]					
PROPERTY	TEST METHOD	MD	CD	MD	CD	MD	CD
Grab Tensile Strength	ASTM D-4632	200 lb	200 lb	370 lb	250 lb	200 lb	200 lb
Grab Tensile Elongation	ASTM D-4632	15%	10%	15%	15%	50%	50%
Trapezoidal Tear Strength	ASTM D-4533	75 lb	75 lb	100 lb	60 lb	80 lb	80 lb
Puncture Strength	ASTM D-6241	450 lb		900 lb		450 lb	
Apparent Opening Size[2]	ASTM D-4751	U.S. Sieve 30 (0.59 mm)		U.S. Sieve 70 (0.21 mm)		U.S. Sieve 70 (0.21 mm)	
Permittivity	ASTM D-4491	0.05 sec^{-1}		0.28 sec^{-1}		1.1 sec^{-1}	
Ultraviolet Resistance Retained at 500 hours	ASTM D-4355	70% strength		70% strength		70% strength	

[1] All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction; CD is cross direction.

[2] Values for AOS represent the average maximum opening.

Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPEP) and conform to the values in Table H.1.

The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including selvages.

When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing riprap on geotextile, do not exceed a one foot drop height.

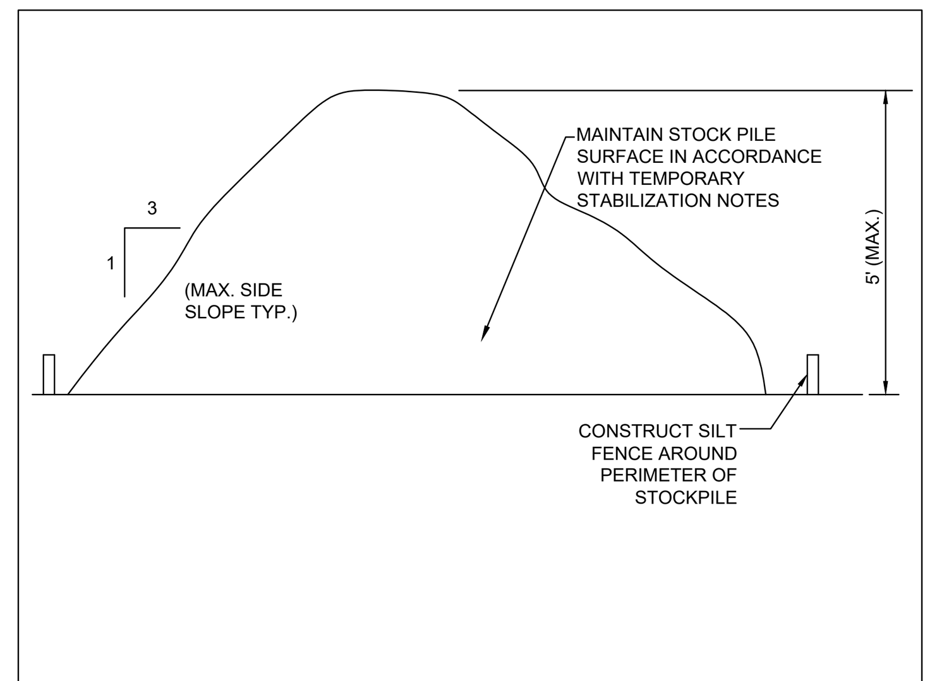
H.1

PHASE I SEQUENCE OF CONSTRUCTION:

1. NOTIFY BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS, AND INSPECTIONS, SEDIMENT CONTROL (410-887-3226) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK ON SITE. HIGH VISIBILITY ORANGE SAFETY FENCE SHALL BE MANUALLY INSTALLED ALONG THE LIMIT OF DISTURBANCE (LOD) WHEREVER THE LOD IS WITHIN 50 FEET OF ANY FOREST BUFFER OR FOREST CONSERVATION EASEMENT, CRITICAL AREA OR CRITICAL AREA BUFFER. THIS FENCE SHALL BE INSPECTED BY DEPS AT THE PRE-CONSTRUCTION MEETING. (WEEK 1)
2. STAKE OVERALL LIMIT OF DISTURBANCE PER THE APPROVED EROSION AND SEDIMENT CONTROL PLANS. INSTALL SAFETY FENCE AS NECESSARY.
3. CLEAR, GRUB AND REMOVE AND NECESSARY EXISTING FEATURES INTERFERING WITH PERIMETER SEDIMENT AND EROSION CONTROL MEASURES AND DEVICES ONLY. INSTALL STABILIZED CONSTRUCTION ENTRANCE WITH MOUNTABLE BERM AND SILT FENCE AS DIRECTED BY THE BALTIMORE COUNTY SEDIMENT CONTROL INSPECTOR AND AS SHOWN ON THE APPROVED PLANS. SILT FENCE SHALL BE INSPECTED AND MAINTAINED EACH DAY AND AFTER EACH STORM EVENT. MAINTENANCE SHALL INCLUDE BUT NOT LIMITED TO REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEEDED TO ENSURE PROPER FUNCTION (WEEK 1).
4. WITH THE APPROVAL OF BALTIMORE COUNTY DEPARTMENTS OF PERMITS, APPROVALS, AND INSPECTIONS, SEDIMENT CONTROL AND THE SEDIMENT CONTROL INSPECTOR CLEAN AND GRUB REMAINDER OF THE SITE. REMOVE REMAINDER OF PAVING, CURB, NECESSARY UTILITIES, ETC. AS SHOWN ON THE PLANS. ALL AREAS OUTSIDE OF THE PERIMETER CONTROL MEASURES SHALL BE COMPLETED PER THE "WORK OUTSIDE PERIMETER CONTROL NOTES" AND "UTILITY NOTES". DISPOSAL MATERIAL WILL EITHER NEED TO BE TAKEN TO A RUBBLE LANDFILL WITH AN ACTIVE GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN, OR AN EXISTING ASPHALT RECYCLING FACILITY SUBJECT TO THE SAME. (WEEKS 2-3)
5. NOTIFY BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS AND INSPECTIONS, SEDIMENT CONTROL UPON COMPLETION OF INSPECTION AND NECESSARY SEDIMENT CONTROL REPAIRS. (WEEK 4)

PHASE II SEQUENCE OF CONSTRUCTION:

1. BEGIN ROUGH GRADING THE SITE. BEGIN INSTALLATION OF UNDERGROUND UTILITIES. IMMEDIATELY UPON INSTALLATION, INSTALL INLET PROTECTION AROUND ALL PROPOSED INLETS. CONTRACTOR TO MAINTAIN POSITIVE FLOW TO ALL INLETS. (WEEKS 5-10)
2. ONCE SUBGRADES ARE REACHED, BEGIN CONSTRUCTION OF BUILDING AND CONCRETE CURB AND GUTTER. CONTINUE CONSTRUCTION OF UNDERGROUND UTILITIES. GRADES AROUND THE BUILDING SHOULD BE DESIGNED SUCH THAT ALL RUNOFF WILL FLOW AROUND THE BUILDING. (WEEKS 10-12)
3. COMPLETE FINE GRADING OF SITE. SITE SHALL BE BROUGHT TO GRADE AS SOON AS POSSIBLE AND STABILIZED WITH EITHER STONE SUBBASE OR PERMANENT SEED AND MULCH. AREAS WITH SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITH PERMANENT SEED AND SOIL STABILIZATION MATTING. (WEEKS 13-17)
4. INSTALL ANY REMAINING STONE SUBBASE AND BEGIN PAVING. (WEEKS 18-22)
5. FLUSH STORM DRAIN SYSTEM AND TAKE THE SPOIL TO A SITE WITH AN ACTIVE GRADING PERMIT AND AN APPROVED SEDIMENT CONTROL PLAN. (WEEK 23)
6. INSTALL LANDSCAPING PER THE APPROVED LANDSCAPE PLAN (WEEK 24-25)
7. UPON STABILIZATION OF THE SITE WITH ESTABLISHED VEGETATION AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL MEASURES AND STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS. (WEEK 26)



TEMPORARY STOCKPILE DETAIL

NOT TO SCALE

ESC 7 OF 7

REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105

BY ____________ DATE ______

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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R.M. STASIOWSKI

PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 49425
PROFESSIONAL CERTIFICATION
I, RYAN M. STASIOWSKI, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49425, EXPIRATION DATE: 6/9/2024

SHEET TITLE:
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

SHEET NUMBER:
C-606

MDE PROJECT NO. 22-SF-0193

Aug 11, 2022
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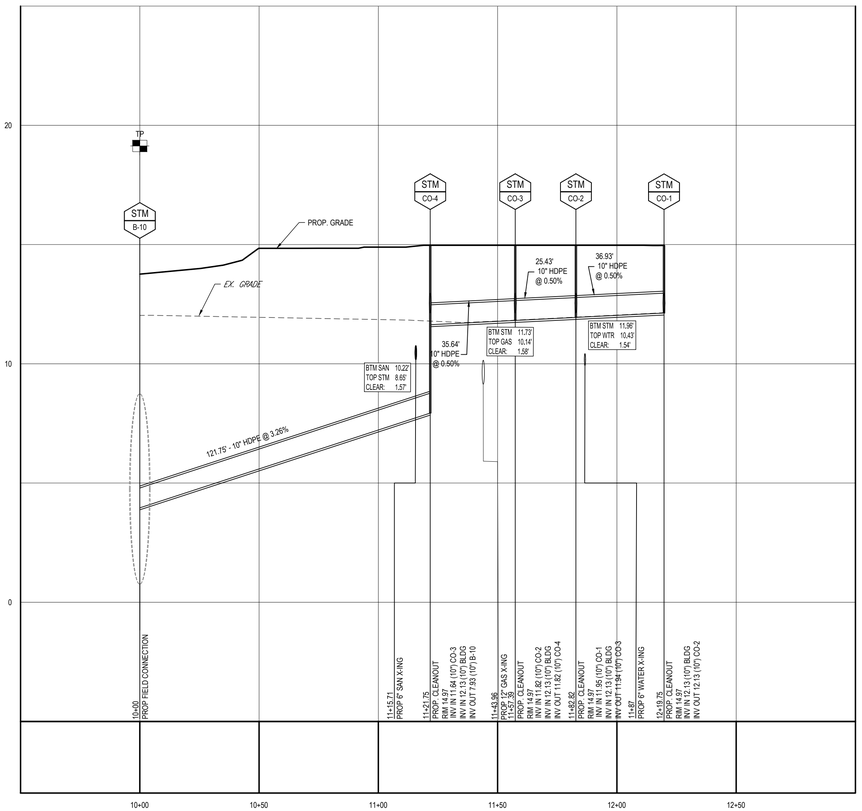
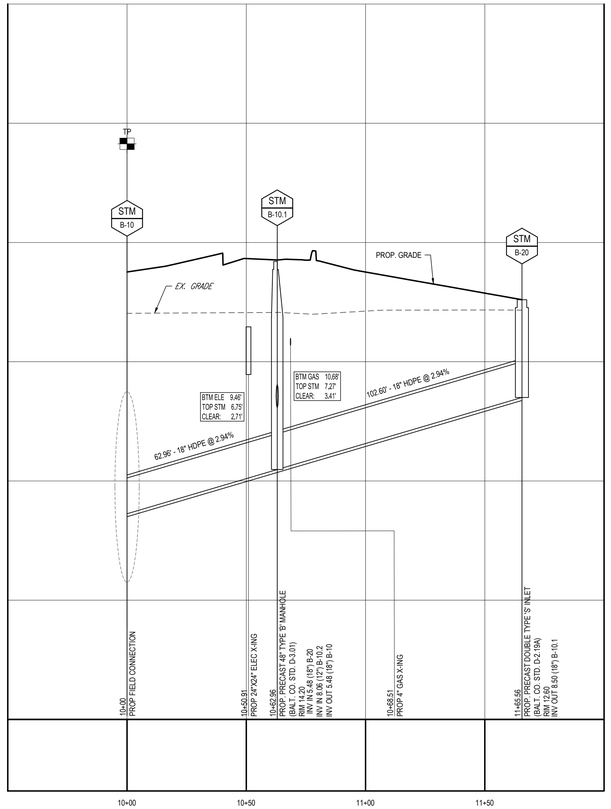
DD



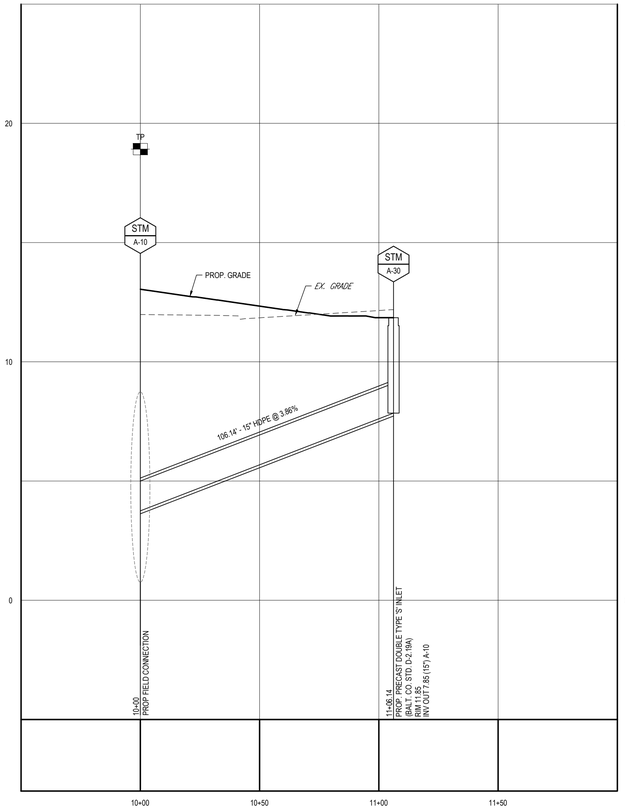
PROPOSED STORM DRAIN PROFILE - (B-10 TO C0-1)

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL



PROPOSED STORM DRAIN - (B-10 TO B-20)

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL



PROPOSED STORM DRAIN - (A-10 TO A-20)

SCALE: 1"= 30 ' HORIZONTAL
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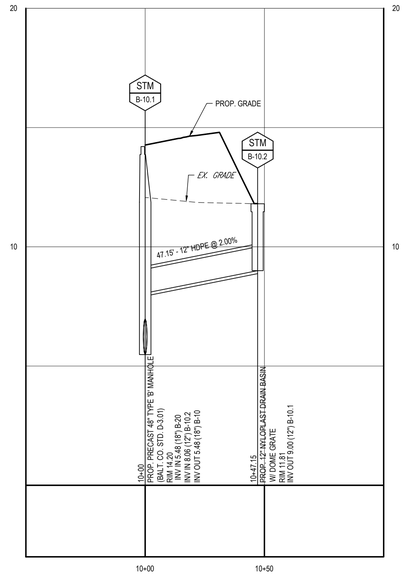

PROPOSED STORM DRAIN PROFILE - (B-10.1 TO B-10.2)

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL

NOTE
CONTRACTOR TO VERIFY STRUCTURE SIZES PRIOR TO ORDERING ANY STRUCTURES.

TEST PIT NOTE
TP
CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY OR 2' BELOW PROPOSED UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING VA, LLC. IN WRITING.

3 1.5 .75 0 3
1"= 3'

30 15 7.5 0 30
1"= 30'

Aug 11, 2022
C:\PROGRAMDATA\BOHLER\2022\C3D2022\TEMP\ACPUBLISH_25308\MDA220044.00 - PSTM---LAYOUT C-801 STORM DRAIN PROFILES.DWG

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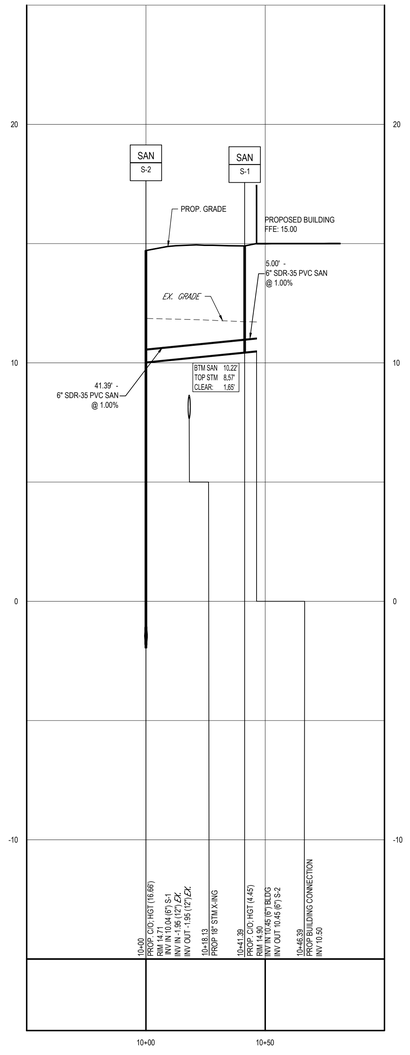
SHEET TITLE:

STORM DRAIN PROFILES

SHEET NUMBER:

C-801

MDE PROJECT NO. 22-SF-0193



PROPOSED SANITARY SEWER PROFILE - S-4 TO BLDG

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL

TEST PIT NOTE

TP

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3 1.5 .75 0 3
1"= 3'

30 15 7.5 0 30
1"= 30'

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SHEET TITLE:

SANITARY SEWER PROFILES

SHEET NUMBER:

C-802

MDE PROJECT NO. 22-SF-0193

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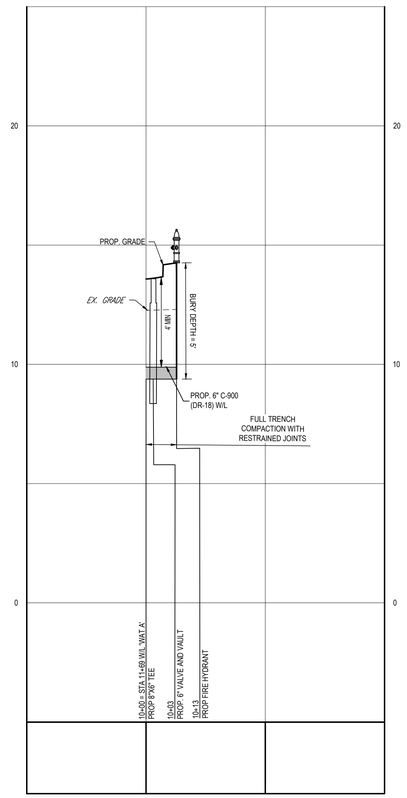
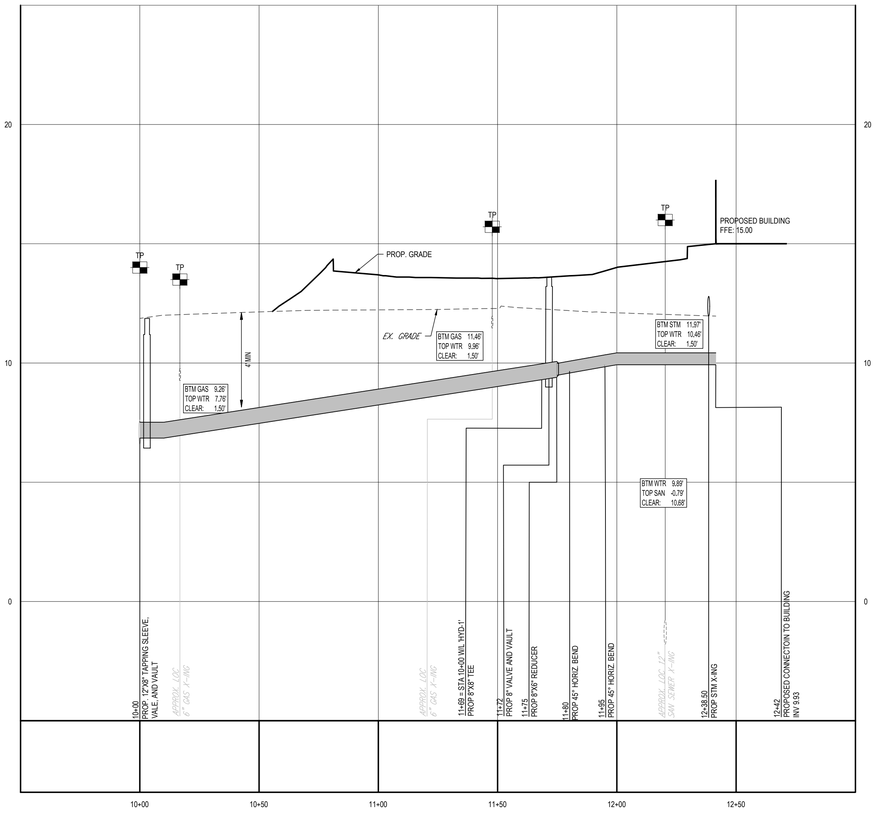
DMD



PROPOSED WATERLINE PROFILE - HYD-1

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL



PROPOSED WATERLINE PROFILE - A

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL

3 1.5 .75 0 3
1"= 3'

30 15 7.5 0 30
1"= 30'

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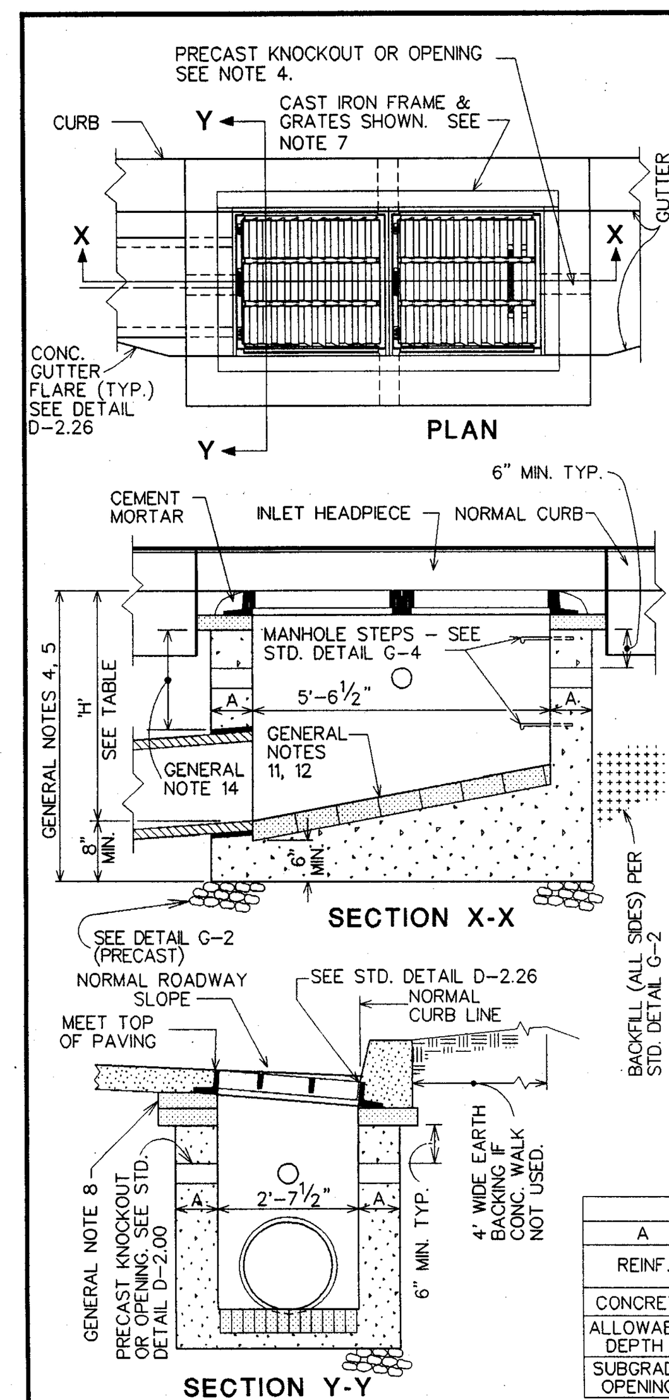
SHEET TITLE:

WATERLINE PROFILES

SHEET NUMBER:

C-803

MDE PROJECT NO. 22-SF-0193



NOTES

1. SEE STD. DETAIL D-2.00 FOR GENERAL NOTES.
2. INLET MAY BE CONSTRUCTED OF PRECAST OR REINFORCED CONCRETE. SIZE, TYPE AND DIRECTION OF INLET CONNECTION WILL VARY TO SUIT CONDITIONS. SEE DETAIL G-1.
3. PLACE 1/4" EXPANSION MATERIAL OF SAME TYPE APPROVED FOR PAVEMENT AT LOCATIONS SHOWN ON STD. DETAIL D-2.26, & BETWEEN THE FRAME AND ABUTTING RIGID PAVEMENT.
4. SUBGRADE DRAINAGE – 1 EACH WALL. OFFSET AS REQ'D. TO AVOID STEPS, PIPES. SEE TABLE.
5. CAST-IN-PLACE REINFORCEMENT REQUIRED ON OUTSIDE, AS WELL AS INSIDE, OF WALLS BELOW 7'-0" WHEN 'H' IS GREATER THAN 7'-0". SPACING IS SAME AS FOR INSIDE OF WALL.
6. SUPPORT BEAM SHALL NOT BE USED.
7. USE APPROVED BICYCLE-SAFE GRATE (STD. DETAIL D-2.21A) WITHIN ALLEYS AND PUBLIC ROAD RIGHT-OF-WAY.
8. INLET MAY BE USED IN MEDIAN DITCHES OR AS A YARD INLET, WITH OR WITHOUT A CONCRETE COLLAR. SEE STD. DETAIL D-2.19B. USE PARALLEL BAR GRATE (STD. DETAIL D-2.21) FOR YARD AND MEDIAN INLETS OUTSIDE OF PUBLIC ROAD RIGHT-OF-WAY.
9. TYPE 'S' INLET – DOUBLE GRATE TANDEM MAY BE USED WITH ONE END ADJACENT TO CURB. FRAME WILL BE LAID ON NORMAL SLOPE OF ROADWAY UNLESS NOTED OTHERWISE. ORIENT FRAMES & GRATES AS REQUIRED TO COLLECT RUNOFF. FRAME & GRATE DIMENSIONS SAME AS WHEN SIDE IS ADJACENT TO CURB AS SHOWN ON LEFT.
10. THIS INLET SHALL NOT BE USED IN ROADWAY SUMPS. USE A COMBINATION INLET (STD. DETAIL D-2.20) AT A SUMP WITHIN ROAD RIGHT-OF-WAY.

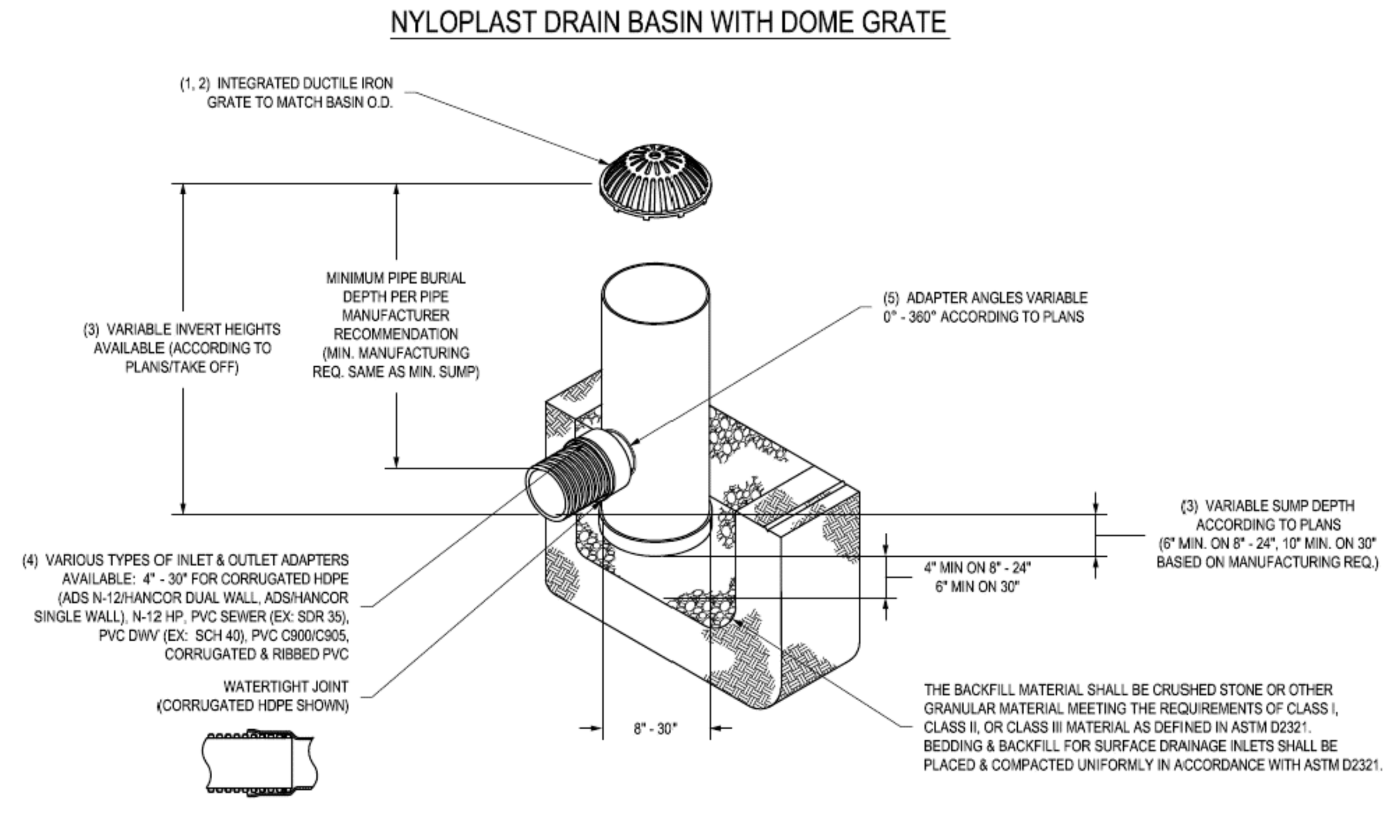
	PRECAST	POURED-IN-PLACE
A	6" MIN.	8 1/2 "
REINF.	2 LAYERS- 4x4 W4.0 x W4.0- WWF	#4 BARS @ 6" C/C E.W. 2" COVER. SEE NOTE 5.
CONCRETE	4,500 PSI	MIX NO. 3
ALLOWABLE DEPTH	B.C.B.E/C APPROVAL REQUIRED OVER 15'	
SUBGRADE OPENINGS	SEE DETAIL D-2.00	4" x 4" OPENINGS OR ALTERNATE AS DIRECTED

APPROVAL
DIRECTOR
BUR. OF ENGINEERING/CONSTRUCTION
3/18/02
DATE

DEPARTMENT OF PUBLIC WORKS
STORM DRAINAGE DETAILS
TYPE S INLET
DOUBLE GRATE TANDEM
(NO SUPPORT BEAM)

ISSUED: OCTOBER, 1977
REVISED: NOVEMBER, 2001
REVISED:
PLATE
D-2.19A

NYLOPLAST DRAIN BASIN WITH DOME GRATE



1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

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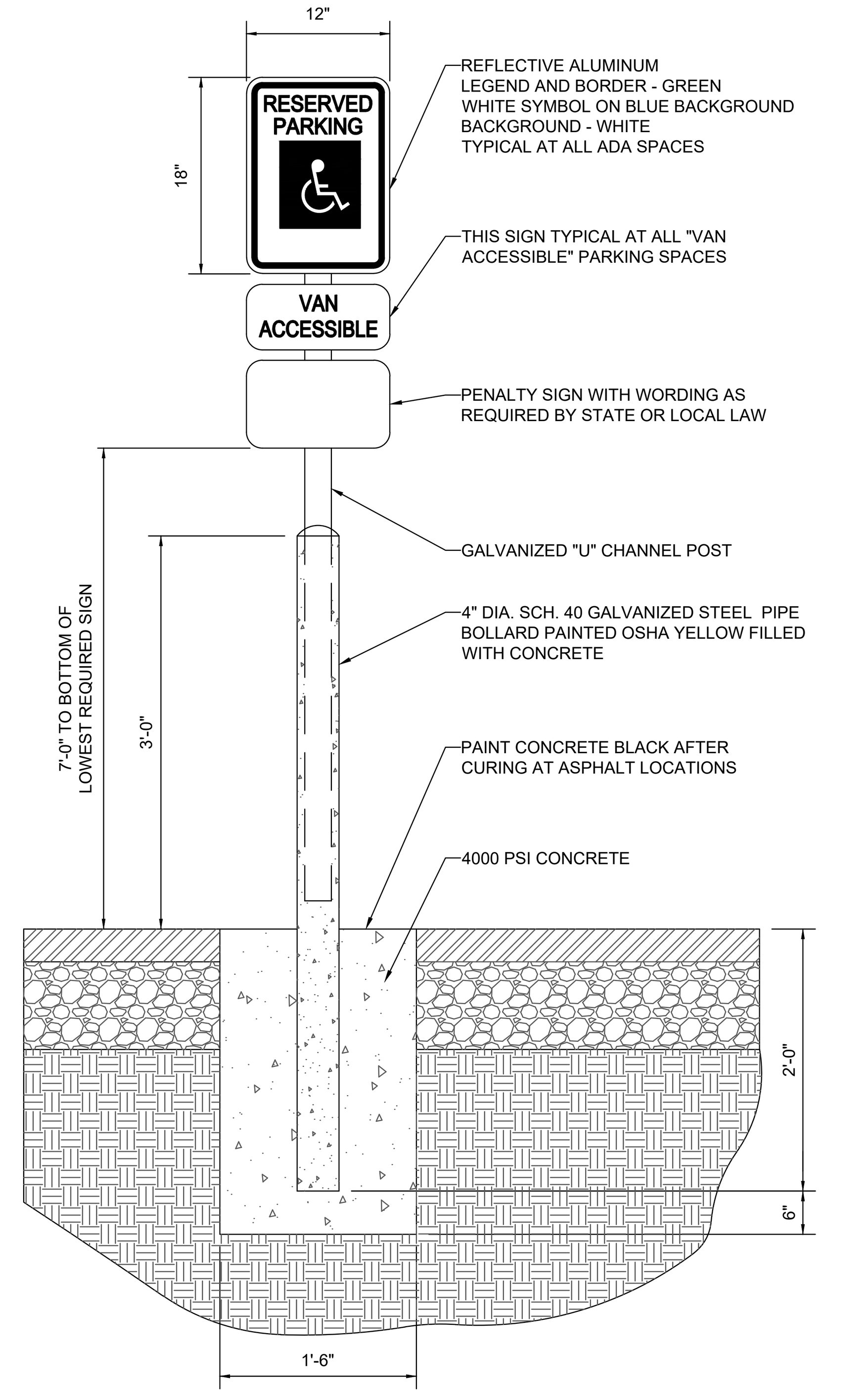
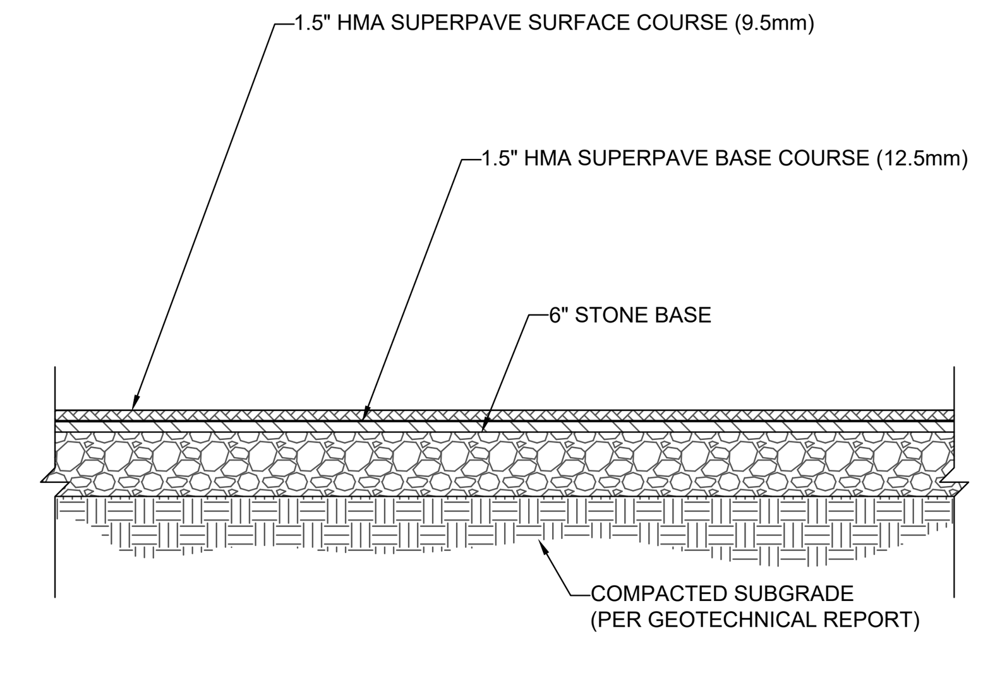
DRAWN BY EBC	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 03-25-10			
REVISED BY NMH	PROJECT NO./NAME	TITLE	DRAIN BASIN WITH DOME GRATE QUICK SPEC INSTALLATION DETAIL
DATE 03-11-16			
DWG SIZE A	SCALE 1:40 SHEET 1 OF 1	DWG NO. 7001-110-397	REV D



NOTE:
ONE AT EACH ADA SPACE. WHERE ADA SPACES FACE EACH OTHER WITHOUT WALKWAY, THERE SHALL BE ONE POST WITH SIGNS MOUNTED BOTH SIDES

BOLLARD MOUNTED ADA PARKING SIGN DETAIL
NOT TO SCALE



NOTE:
1. SECTION SHOWN IS BASED ON AN ANTICIPATED CBR OF 10 PER GEOTECHNICAL REPORT PREPARED BY D.W. KOZERA, INC., ENTITLED GEOTECHNICAL ENGINEERING STUDY; TRADEPOINT ATLANTIC MMM MAINTENANCE BUILDING; SPARROWS POINT, MARYLAND, DATED JUNE 29, 2022. FINAL DESIGN TO BE PROVIDED ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE.

STANDARD DUTY ASPHALT PAVEMENT SECTION
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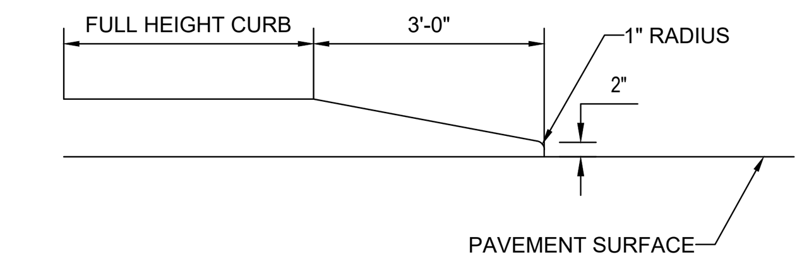

CURB TAPER DETAIL
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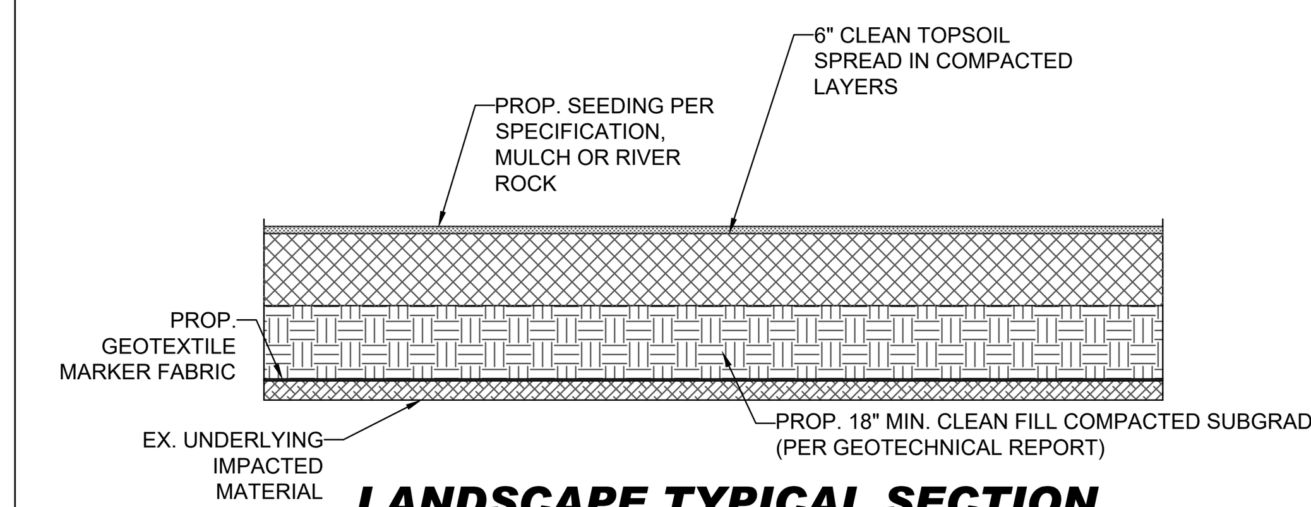
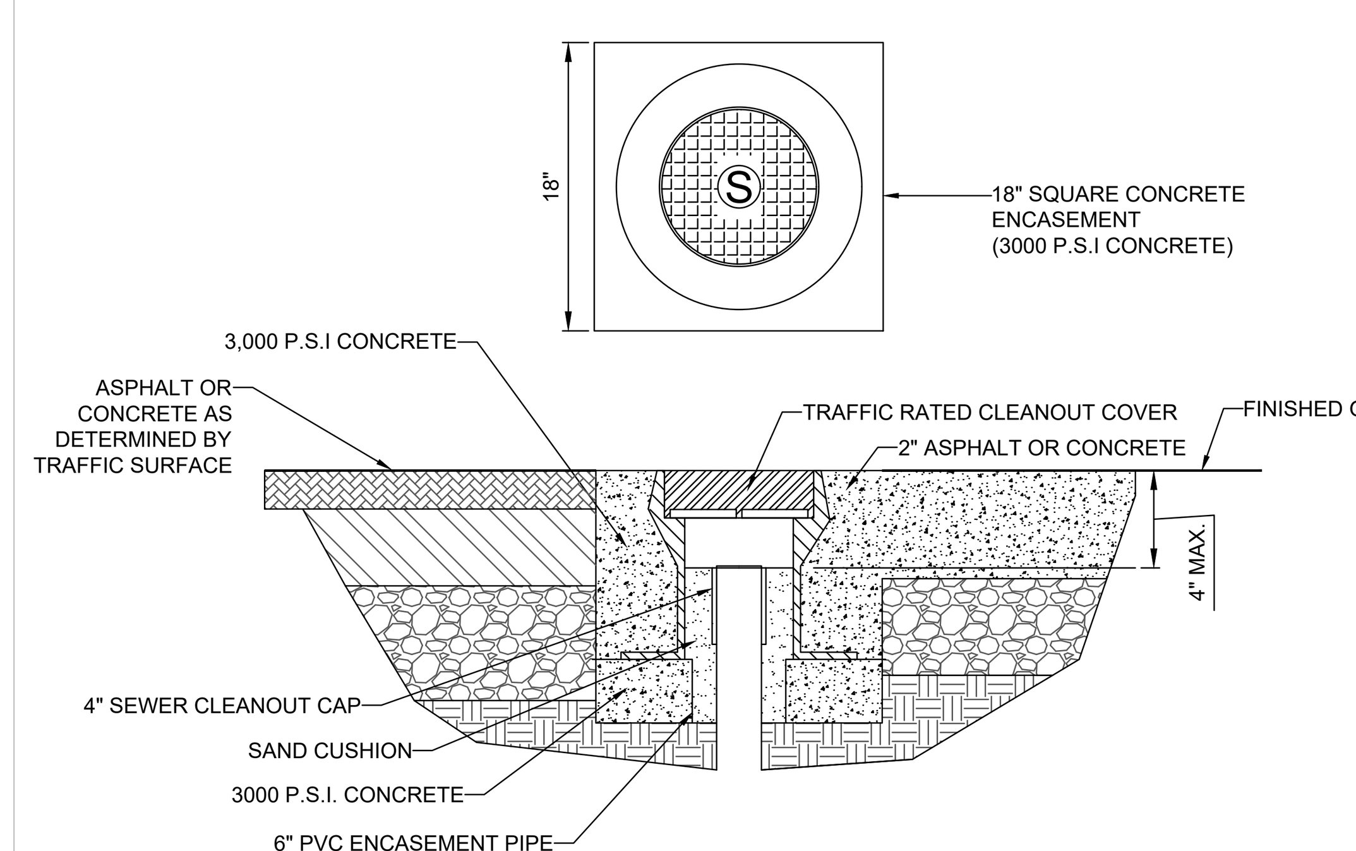


LANDSCAPE TYPICAL SECTION (LAWN AREA)
NOT TO SCALE



TRAFFIC RATED CLEANOUT DETAIL
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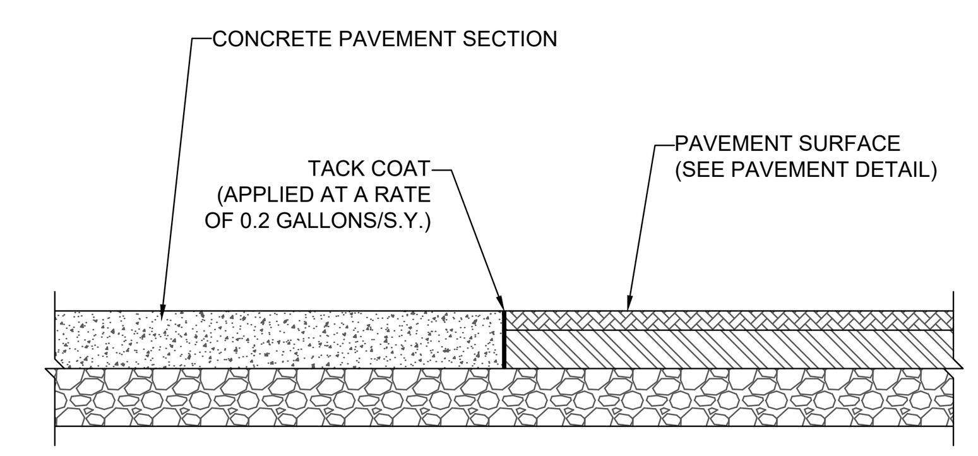

CONCRETE-TO-ASPHALT DETAIL
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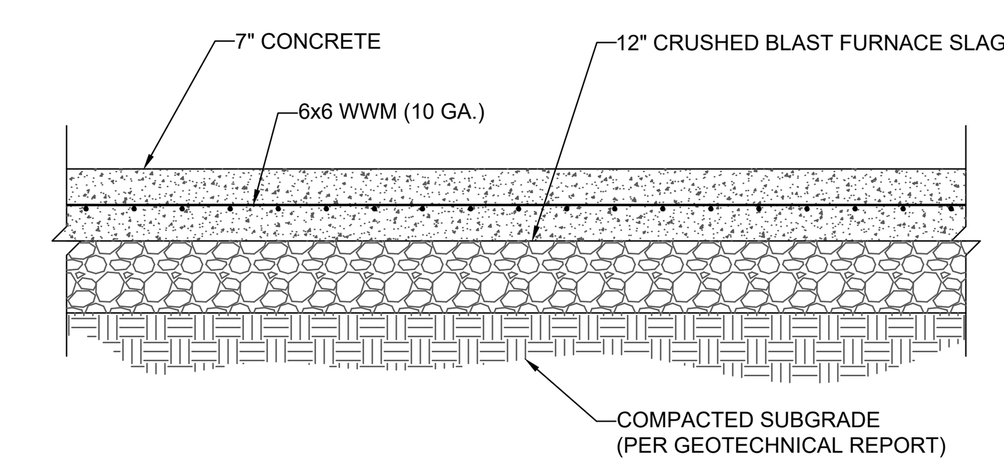

NOTE:
1. SECTION SHOWN IS BASED ON ANTICIPATED CBR OF 15 PER GEOTECHNICAL REPORT PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, ENTITLED: "GEOTECHNICAL ENGINEERING STUDY; 190K LOGISTICS CENTER; TRADEPOINT ATLANTIC; BALTIMORE COUNTY", DATED SEPTEMBER 20, 2021 (PROJECT # 21304A). FINAL DESIGN TO BE PROVIDED ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE.

HEAVY DUTY CONCRETE SECTION
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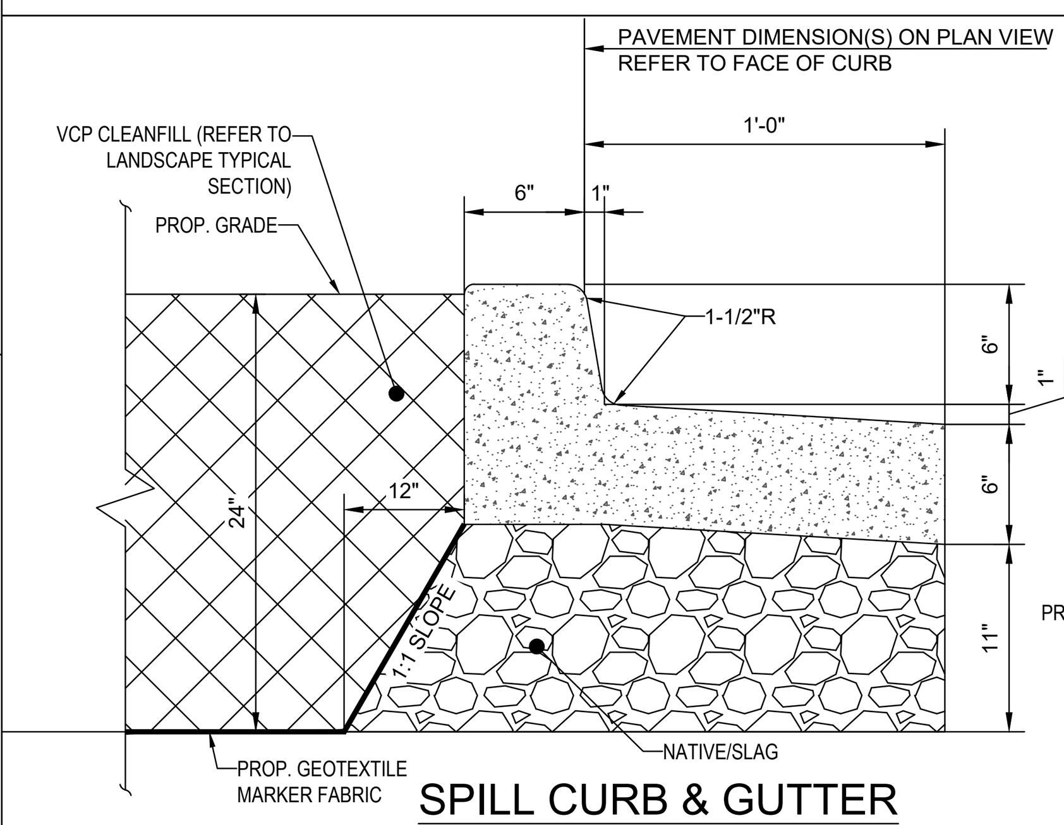
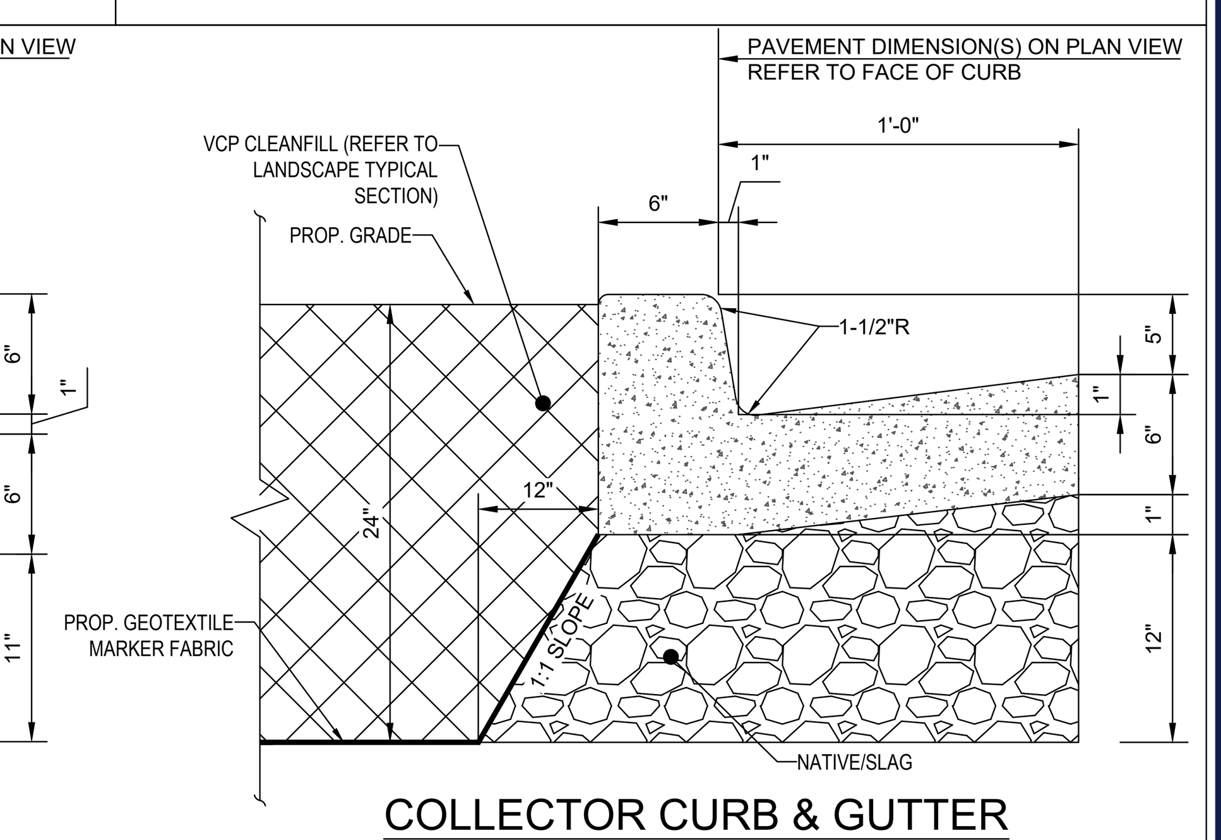


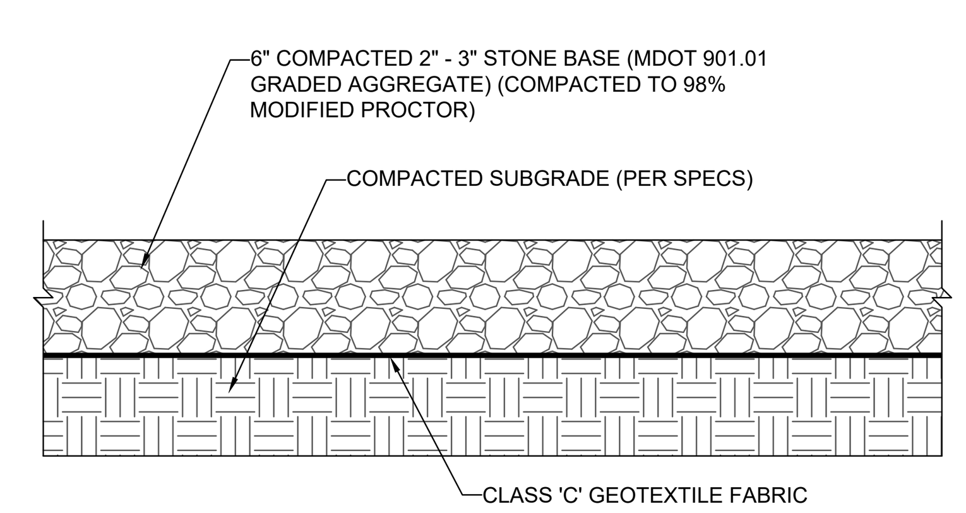
SPILL CURB & GUTTER



COLLECTOR CURB & GUTTER

NOTES:
1. CONCRETE FOR CURBING SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. @ 28 DAYS.
2. CONSTRUCTION STAKING FOR CURB INSTALLATION SHALL BE REFERENCED (CUT OR FILL) TO THE TOP OF CURB.
3. AT CONTRACTOR'S OPTION, THE GUTTER THICKNESS MAY BE INCREASED AT THE EDGE OF PAVEMENT TO MAKE BOTTOM OF GUTTER CONTIGUOUS WITH BOTTOM OF ASPHALT PAVEMENT.
4. CONTRACTION JOINTS SHALL BE PLACED @ 10'-0" O.C. TOOLED 1/4" (±1/16") WIDE, 1" DEEP. EXPANSION JOINTS SHALL BE PLACED @ 40'-0" INTERVALS, MAXIMUM, AND ALL P.C.'S.
5. GUTTER PAN SLOPE TO BE ADJUSTED WITHIN ACCESSIBLE PARKING SPACES TO MATCH SLOPE BETWEEN SPOT ELEVATIONS.

CONCRETE CURB & GUTTER DETAIL
NOT TO SCALE



GRAVEL STORAGE AREA SECTION
NOT TO SCALE

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY
1	7/20/22	REV. PER CLIENT COMMENTS	DMD / RMS
2	8/11/22	REV. PER CLIENT COMMENTS	DMD / RMS

Know what's below. Call before you dig.
ALWAYS CALL 811
It's fast. It's free. It's the law.

ISSUED FOR MUNICIPAL & AGENCY REVIEW & APPROVAL

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	MDA220044.00
DRAWN BY:	DMD
CHECKED BY:	MJG
DATE:	05/16/2022
CAD I.D.:	MDA220044CNDS

PROJECT:

CONSTRUCTION DOCUMENTS

FOR

TRADEPOINT ATLANTIC

MMM MAINTENANCE FACILITY

1331 POWERHOUSE ROAD
BALTIMORE, MD 21219
TM 111, GRID 14, PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
JBASS@BOHLERENG.COM

R.M. STASIOWSKI
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 49425

PROFESSIONAL CERTIFICATION
I, RYAN M. STASIOWSKI, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49425, EXPIRATION DATE: 6/9/2024

SHEET TITLE:

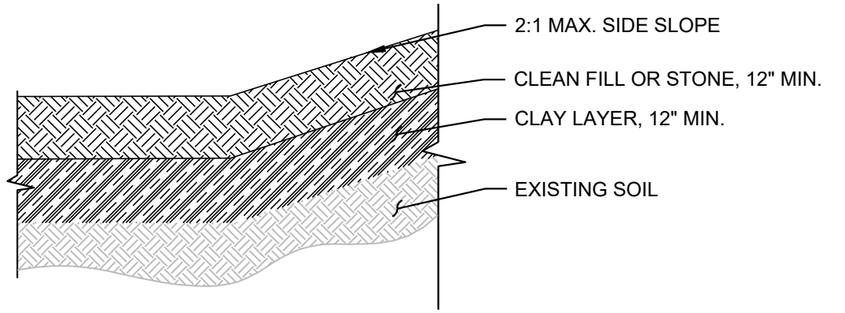
CONSTRUCTION DETAILS

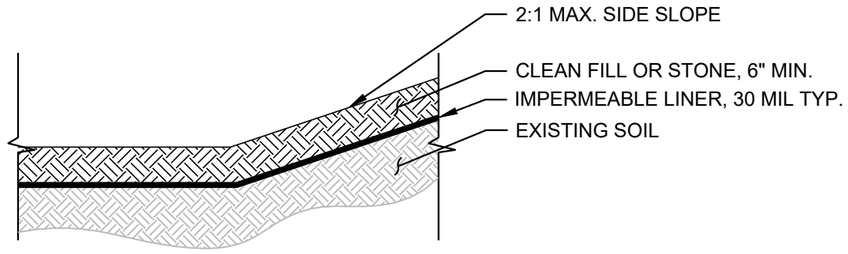
SHEET NUMBER:
C-901

MDE PROJECT NO. 22-SF-0193

Aug 11, 2022
H:\2022\MDA220044.00\CAD\DRAWINGS\PLAN SETS\CONSTRUCTION DOCUMENTS\MDA220044 - CNDS------>LAYOUT: C-901 - DETAILS
DD

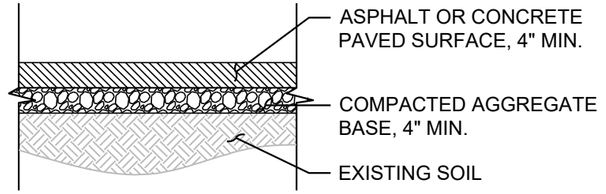
APPENDIX E





TYPICAL POND SECTIONS
NOT TO SCALE

TYPICAL LANDSCAPE SECTION
NOT TO SCALE



TYPICAL PAVING SECTION
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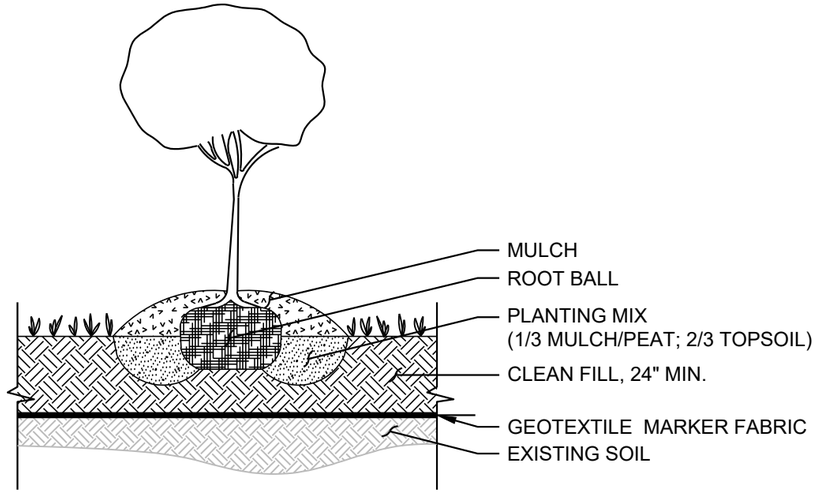


TYPICAL PLANTING SECTION
NOT TO SCALE

GEOTEXTILE MARKER FABRIC SPECIFICATIONS

THE GEOTEXTILE MARKER FABRIC SHALL BE A NONWOVEN PERVIOUS SHEET OF POLYPROPYLENE MATERIAL. ADD STABILIZERS AND/OR INHIBITORS TO THE BASE MATERIAL, AS NEEDED, TO MAKE THE FILAMENTS RESISTANT TO DETERIORATION BY ULTRAVIOLET LIGHT, OXIDATION AND HEAT EXPOSURE. REGRIND MATERIAL, WHICH CONSISTS OF EDGE TRIMMINGS AND OTHER SCRAPS THAT HAVE NEVER REACHED THE CONSUMER, MAY BE USED TO PRODUCE THE GEOTEXTILE. POST-CONSUMER RECYCLED MATERIAL MAY BE USED. GEOTEXTILE SHALL BE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING THE EDGES. GEOTEXTILES SHALL MEET THE REQUIREMENTS SPECIFIED IN TABLE 1. WHERE APPLICABLE, TABLE 1 PROPERTY VALUES REPRESENT THE MINIMUM AVERAGE ROLL VALUES IN THE WEAKEST PRINCIPAL DIRECTION. VALUES FOR APPARENT OPENING SIZE (AOS) REPRESENT MAXIMUM AVERAGE ROLL VALUES

TABLE 1

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	120 (534)	120 (534)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	50 (223)	50 (223)
CBR Puncture Strength	ASTM D6241	lbs (N)	310 (1380)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec^{-1}	1.7	
Flow Rate	ASTM D4491	$gal/min/ft^2$ ($l/min/m^2$)	135 (5500)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

ARM Group LLC
Engineers and Scientists

designed RJC
checked TNP
drawn RJC
scale N/A
date 9/8/2020
project no. 160443M

drawing title: MINIMUM CAPPING SECTION DETAILS

project title: SPARROWS POINT TRADEPOINT ATLANTIC

SPARROWS POINT
BALT. COUNTY, MARYLAND

Sheet 1

APPENDIX F

GENERAL NOTES:

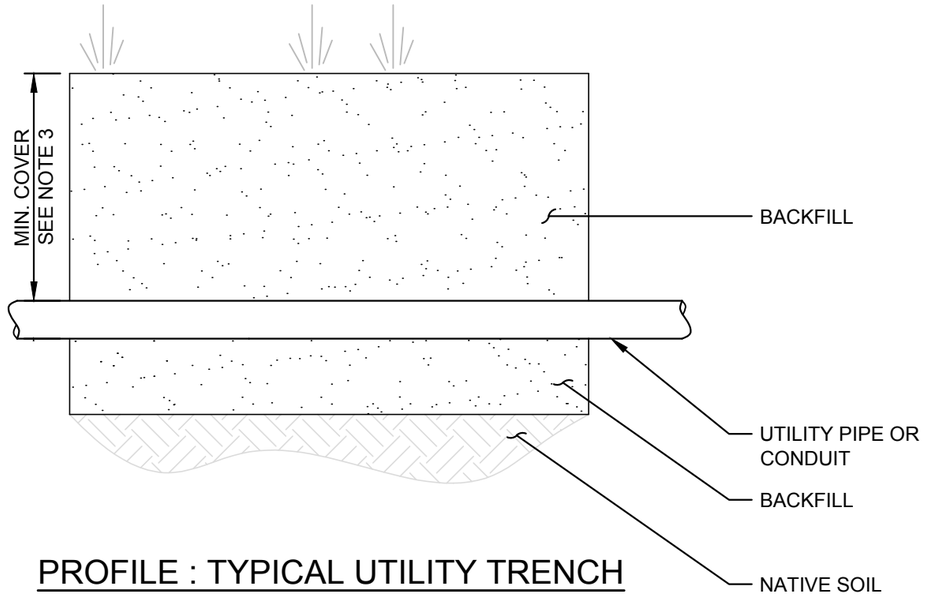
1. ALL PIPES OR CONDUIT SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.

2. ALL PIPES SHALL BE PROPERLY PLACED AND BEDDED TO PREVENT MISALIGNMENT OR LEAKAGE. PIPE BEDDING SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE THE POTENTIAL FOR ACCUMULATION OF WATER AND CONCENTRATED INFILTRATION.

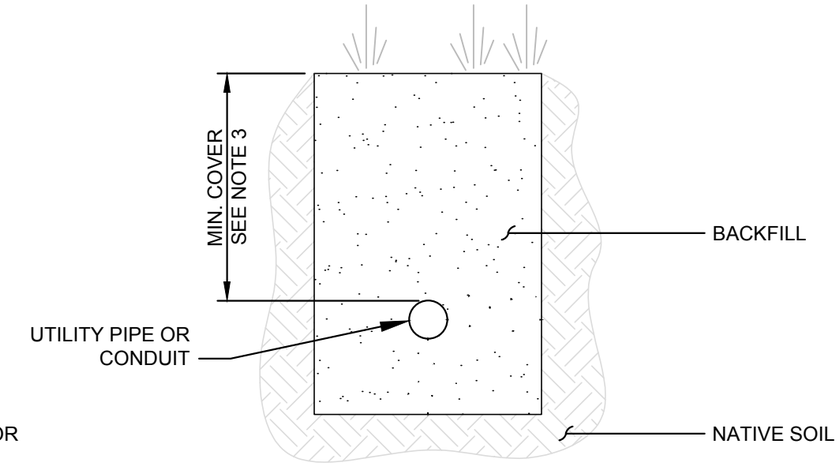
3. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.

4. TRENCHES SHALL BE BACKFILLED WITH BEDDING AND MATERIALS APPROVED BY MDE.

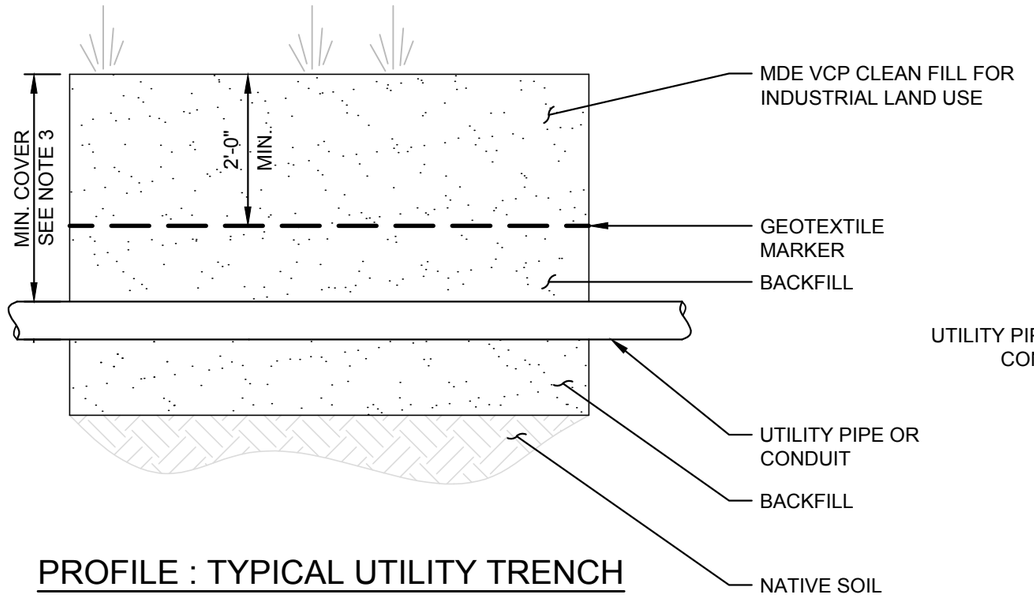
5. FOR ANY UTILITY SEGMENT WHICH GOES THROUGH AN AREA WHICH IS DESIGNATED TO RECEIVE A LANDSCAPED CAP, THE UPPER 2 FEET OF BACKFILL MUST MEET THE REQUIREMENTS OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE. IN THIS CASE THE MDE VCP CLEAN FILL WILL BE UNDERLAIN BY A GEOTEXTILE MARKER FABRIC. UTILITY SEGMENTS WHICH GO THROUGH AREAS WHICH DO NOT REQUIRE CAPPING OR ARE DESIGNATED TO RECEIVED A PAVED CAP WILL BE BACKFILLED WITH MATERIALS APPROVED BY MDE FOR THIS USE.



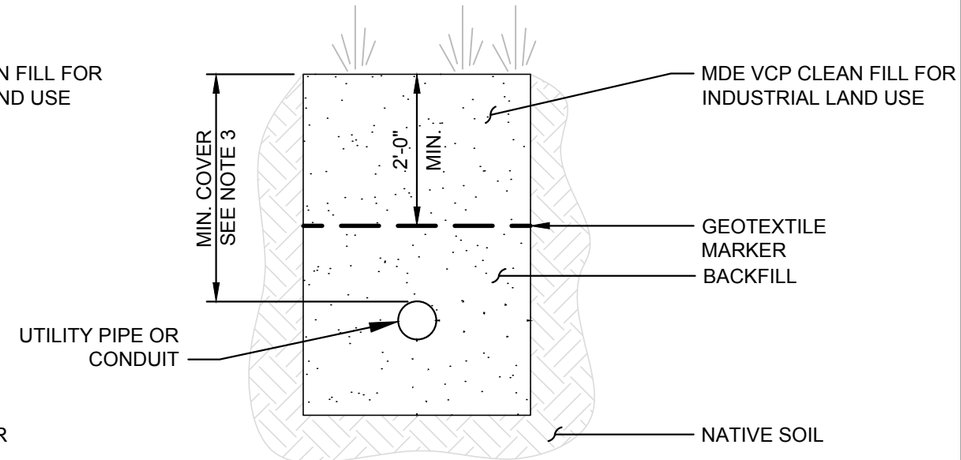
PROFILE : TYPICAL UTILITY TRENCH



SECTION : TYPICAL UTILITY



PROFILE : TYPICAL UTILITY TRENCH
(SEE NOTE 5)



SECTION : TYPICAL UTILITY
(SEE NOTE 5)

ARM Group LLC
Engineers and Scientists

TYPICAL UTILITY
CROSS SECTIONS
Sparrows Point Site
Tradepoint Atlantic

September 2020	Figure
1/2" = 1'-0"	1
160443M	

APPENDIX G

Utility Excavation NAPL Contingency Plan

Revision 5 – September 20, 2022

Objectives:

The purpose of this plan is to describe procedures to be followed in the event that non-aqueous phase liquid (NAPL) is encountered in utility trenches or other excavations during development of the Tradepoint Atlantic property. The specific objectives of this plan and the procedures outlined herein are:

1. To ensure identification and proper management of NAPL contaminated soils.
2. To ensure proper worker protection for working in areas of NAPL contamination.
3. To ensure that the installation of new utilities does not create new preferential flow paths for the migration of NAPL or soil vapors.

Identification of Oil & Grease and Petroleum Contaminated Soil:

An Environmental Professional (EP) will be on-site to determine if soils show evidence of the presence of NAPL during installation of utility trenches or other excavation activities completed during development. NAPL-contaminated soils can be identified by the presence of free oil. Free oil (NAPL) is liquid oil which could potentially be drained or otherwise extracted from the soil, and is the focus of this contingency plan, although severe staining accompanied by odors may be addressed via similar contingency measures provided herein (based on the judgement of the EP).

If NAPL is encountered during construction, potentially impacted material from the excavation will be removed and separated on plastic / covered with the same. Additional discussion of removal of material is in the **Soil Excavation, Staging, Sampling and Disposal** section below. If NAPL is encountered in an area where there is no known historical NAPL impact, the MDE will be notified (see **Initial Reporting** section) and the open excavation may be allowed to sit overnight. If after removal of the initial material identified additional NAPL impacted material enters the open excavation, the extent of impacts may be delineated and additional material removed / segregated. .

Soil Excavation, Staging, Sampling and Disposal:

The EP will monitor all utility trenching and excavation activities for signs of potential contamination. In particular, soils will be monitored with a hand-held photoionization detector (PID) for potential volatile organic compounds (VOCs) and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of NAPL contamination that may be different than what was already characterized.

Soil exhibiting physical evidence of NAPL contamination, which is located within a proposed new utility or subsurface structure (i.e., foundation, sump, electrical vault, underground tank, etc.), will

be excavated and segregated for disposal at the on-site nonhazardous landfill (Greys Landfill) or an off-site facility pending the completion of required analytical testing. If NAPL material continues to enter the open excavation, additional excavation may be continued in the field based on visual screening supplemented by the PID.

Any recovered NAPL impacted material will be segregated and collected for disposal. As required for disposal, samples impacted by NAPL will be collected for profiling/waste characterization and submitted to a fixed laboratory. Upon receipt of any additional characterization analytical results, the stockpiles will be tracked from generation to disposal.

Initial Reporting:

If evidence of NAPL in soil or groundwater is encountered during excavation in an area with no known historic NAPL impact, it will be reported to the MDE. Information regarding the location and characteristics of NAPL contaminated material will be documented as follows:

- Location (Site / Parcel ID with map);
- Approximate extent of contamination (horizontally and vertically – prepare a sketch including dimensions);
- Relative degree of contamination (i.e. free oil with strong odor vs. staining); and
- Visual documentation (take photographs and complete a photograph log)

Utility Installations in Impacted Areas:

Underground piping or conduits installed through areas of known NAPL contamination shall be leak proof and water tight. All joints will be adequately sealed or gasketed, and pipes or conduits will be properly bedded and placed to prevent leakage. Trench backfill will meet the MDE definition of clean fill, or be otherwise approved by the MDE. Bedding must be properly placed and compacted below the haunches of the pipe. Clay, flowable fill, or concrete plugs may be placed every 100 feet across any permeable bedding to minimize the preferential flow and concentration of water along the bedding of such utilities.

If required, each trench plug will be constructed with a 2-foot-thick clay plug or 1-foot-thick flowable fill or concrete plug, perpendicular to the pipe, which extends at least 1 foot in all directions beyond the permeable pipe bedding. The plug acts as an anti-seep collar, and will extend above the top of the pipe. A specification drawing for installation of the trench plug has been provided as **Figure 1**.

GENERAL NOTES:

1. ALL PIPES OR CONDUIT PASSING THROUGH AREAS OF PETROLEUM CONTAMINATION SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.

2. ALL PIPES SHALL BE PROPERLY PLACED AND BEDDED TO PREVENT MISALIGNMENT OR LEAKAGE. PIPE BEDDING SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE THE POTENTIAL FOR ACCUMULATION OF WATER AND CONCENTRATED INFILTRATION.

3. ANTI-SEEP COLLARS FROM THE PIPE MANUFACTURER, THAT ARE PRODUCED SPECIFICALLY FOR THE PURPOSE OF PREVENTING SEEPAGE AROUND THE PIPE, ARE ACCEPTABLE IF INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND ONLY WITH PRIOR APPROVAL BY TPA.

4. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.

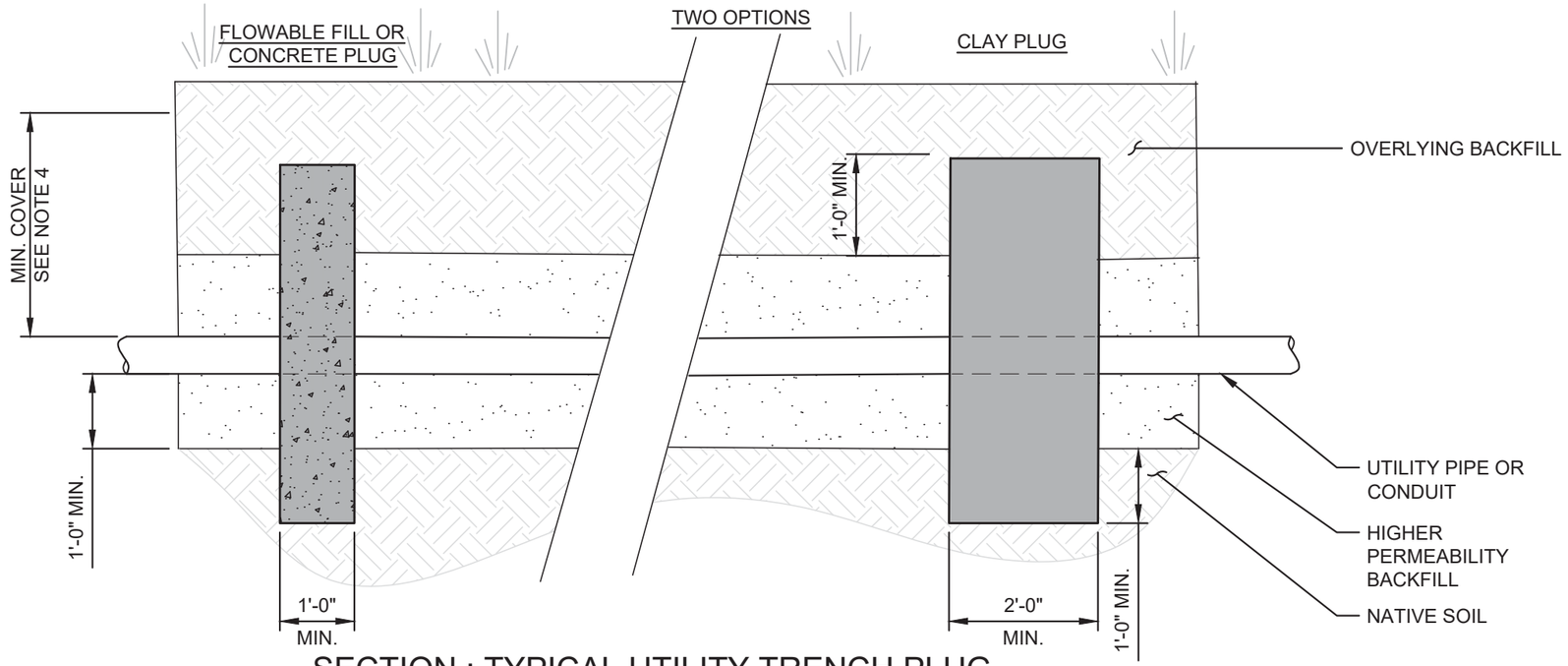
5. TRENCHES SHALL BE BACKFILLED WITH BEDDING AND MATERIALS APPROVED BY MDE.

6. FOR ADDITIONAL REQUIREMENTS, INCLUDING THE USE OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE AND INSTALLATION OF GEOTEXTILE MARKER FABRIC, REFER TO NOTE 5 ON THE TYPICAL UTILITY CROSS SECTIONS.

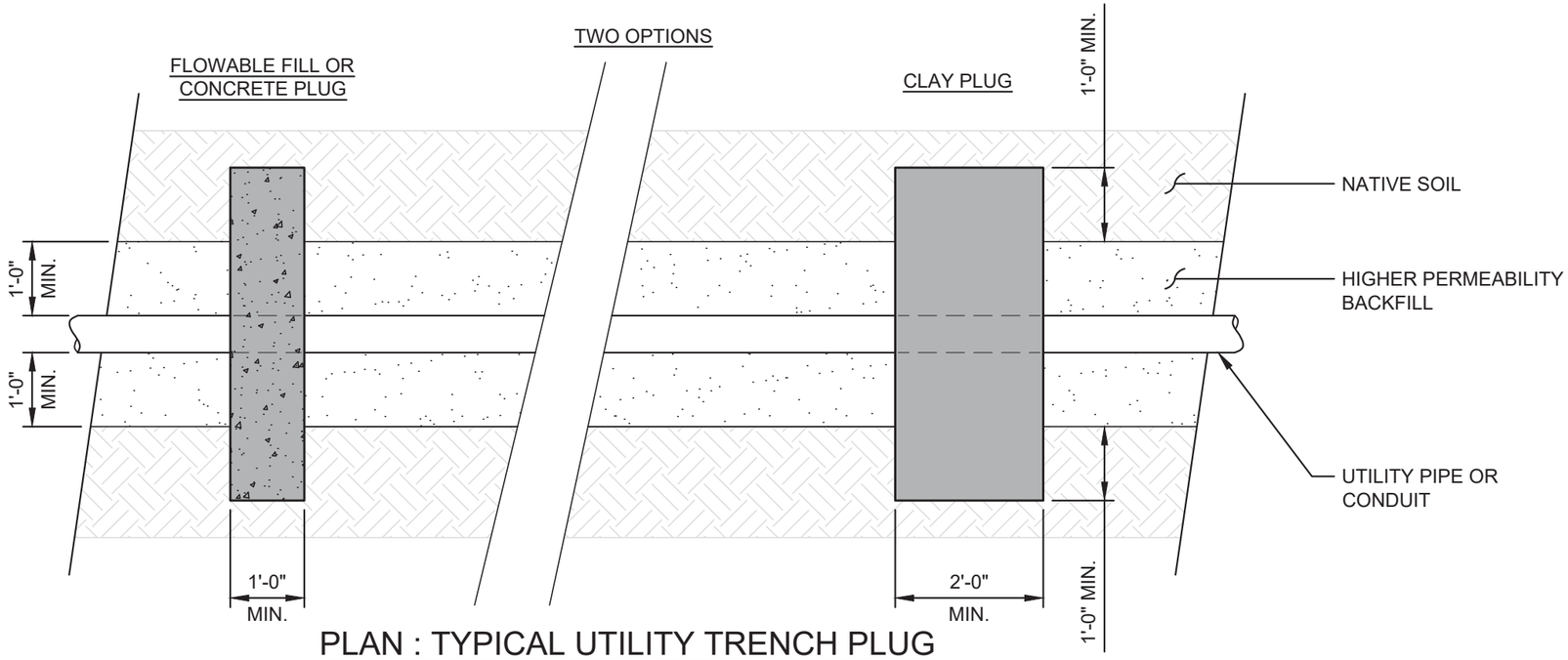
7. ALL UTILITIES INSTALLED THROUGH AREAS CONTAINING NAPL OR ELEVATED CHEMICAL IMPACTS WITH THE POTENTIAL TO TRANSMIT VAPORS ALONG PREFERENTIAL FLOW PATHWAYS SHALL BE EITHER 1) BACKFILLED WITH LOW PERMEABILITY BACKFILL MATERIAL (LESS THAN OR EQUAL TO THE PERMEABILITY OF THE EXISTING SUBGRADE), OR 2) INSTALLED WITH TRENCH PLUGS ALONG THE ALIGNMENT IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN AND THE FOLLOWING NOTES:

   A.) UTILITY TRENCH PLUGS SHALL BE INSTALLED AT 100-FOOT (MAX.) INTERVALS THROUGH ALL AREAS OF NAPL CONTAMINATION.

   B.) UTILITY TRENCH PLUGS SHALL EXTEND A MINIMUM OF 1-FOOT IN ALL DIRECTIONS BEYOND ANY HIGHER PERMEABILITY BACKFILL MATERIALS (I.E., MATERIALS EXCEEDING THE PERMEABILITY OF THE EXISTING SUBGRADE).



SECTION : TYPICAL UTILITY TRENCH PLUG



PLAN : TYPICAL UTILITY TRENCH PLUG

ARM Group LLC
Engineers and Scientists

UTILITY TRENCH PLUG
Sparrows Point Site
Tradepoint Atlantic

September 2020	Figure
Not to Scale	1
160443M	